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AMERICAN FORESTS

OID BUTLER, Editor

L. M. CROMELIN and ERLE KAUFFMAN, Assistant Editors

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Two air views of the Matilija Canyon fire, in the Santa Barbara National Forest, California, where was waged in September one of the greatest forest fire battles in history. In eleven days an area thirty-two miles long and eight miles wide was reduced to ashes. In one wild hour, at the peak of the fire, the flames traveled twelve miles on a five-mile front.



Photographs from Wide World Photos.

THE BATTLE OF MATILIJA CANYON

WHERE A THOUSAND MEN CHOPPING, SWEATING, CURSING IN THE
HEAT OF FLAME AND SMOKE, LAST SEPTEMBER FOUGHT THE
GREATEST FIRE IN THE HISTORY OF THE WEST

By WALLACE HUTCHINSON

"AND THEN," said the ranger, mopping the sweat from his grimy face, "all hell broke loose!"

Strong words, perhaps! But the forest rangers who fought the Matilija fire in the Santa Barbara Forest of California know whereof they speak, for they were fighting one of the greatest fire battles ever waged by the United States Forest Service.

Picture a beautiful fall morning in the mountains of southern California. Brilliant sunshine out of a deep blue sky, fleecy white fog blanketing the valleys and lower mountain slopes. Precipitous mountain slopes clothed with chaparral rise on every hand. A summer resort nestled in sycamores at the end of a ribbon of concrete, and from it a trail winding up the gulch into the wilderness of brush. No rain had fallen for many months. The north wind sighed through the canyons. The chaparral snapped underfoot. It was September in the mountains.

Such was the setting for the Matilija fire on the Santa Barbara National Forest, which will go down in the annals of California forestry as a counterpart of the Winter of the Blue Snow in the mythical days of Paul Bunyan.

When one attempts to describe a fire that laid waste an area thirty-two miles long and eight miles wide in eleven days, and swept over more than 30,000 acres in a few hours, the scene beggars description. No words can tell the majesty of billowing smoke clouds that mushroom the sky with thunderheads, or the terror of fiery walls of flame that surge forward on the wings of the wind. No pen can picture the travail of a thousand men chopping, sweating, cursing in the heat of flame and smoke, or the unflinching heroism of those unsung forest guardians—the rangers. And yet, all these and more are part and parcel of the story of the Matilija fire.

How the fire started no one really knows. A hunter's unextinguished camp fire, perhaps, or a carelessly discarded match or cigarette. It is said that a boy on Sulphur Mountain first noticed the smoke about seven o'clock in the morning

of September 7, 1932, and that it was again seen at eight o'clock. But the nearest telephone was miles away. The first word that reached the Forest Service came three hours later from the La Cumbre Fire Lookout. The tell-tale column of smoke, then over 2,000 feet in height, was some twenty miles away. Other and nearer lookouts would have seen the smoke cloud before it reached this elevation had not the dense fog blanket of the morning interfered with detection. Then, too, the fire was burning in what is known as a "blind area," not under the direct observation of any forest officer or lookout.

Within six minutes after receipt of the first report, Ranger Ernest Baxter, at the Ojai Ranger Station, had ordered sixty fire fighters, a camp boss, a time keeper and six crew leaders, with the necessary tools, food supplies and transportation, from the local fire agent and Forest Service headquarters at

Santa Barbara.

Four minutes later he left with one man for the scene of the fire—a trip of thirteen miles by automobile and five miles on horseback into the upper North Fork of the Matilija. It was noon when Baxter and his companion arrived at the fire, which by that time had spread over 300 acres of rough chaparral-covered slopes. The temperature was ninety-eight degrees and the humidity very low.



How great was the destruction of wild life by the Matilija fire no one can estimate, but as many as eleven dead deer were found huddled together in one spot.

Shortly after two o'clock the first crew of fire fighters, trailing in five miles on foot, started control work on the fire. By four o'clock there were forty men on the line. Conditions were normal, good progress was being made, and with ample reinforcements on the way no unusual difficulty in controlling the fire that night was anticipated. At that time the fire area was 600 acres.

Then came the first big break. A sudden shift of the wind, which combined with the fire gases and fickle canyon air currents reached cyclonic proportions, swept the fire in a southeasterly direction across the North Fork and seriously threatened Lyons Hot Springs, a resort. Another roaring front advanced westward toward the Santa Ynez divide.

At midnight, 100 fresh men with equipment arrived on the scene, but the rough topography and rapid spread of the flames made impossible a direct attack, with reasonable safety for the fire fighters. A council of war was held and new plans for control were laid down by Supervisor Nash-Boulden. When day broke the Matilija fire had covered 28,000 acres.

The story of the next two days is the story of any large fire in the chaparral "forests" of southern California. Airplanes were used for reconnaissance; fire camps were established at strategic points; crews of men were recruited in Los Angeles, Santa Barbara, Ventura and other centers of population and rushed to the scene; trained forest officers to act as sector bosses and crew leaders were commandeered from other National Forests and from State and county fire organizations; pack stock and motor transportation was lined up for action; radio communication was set up between isolated camps and the fire headquarters at the Ojai Ranger Station; emergency telephone lines were strung between camps and connected with the central dispatching agency; working tools and food supplies were dispatched to the fire front, and a Weather Bureau truck fully equipped with radio and instruments to forecast local meteorological conditions was ordered to the scene. The carefully worked out fire control plans of the Forest Service were facing a crucial test. Every move of the fire was matched with a well timed counter offensive. Shock troops were thrown against its smoking flanks; fire breaks were cut through the chaparral. Backfires were set to fight the oncoming fire with fire. Special crews were sent in to wipe up "hot spots." All of this in one of the roughest portions of the Topa Topa Mountains—a country inaccessible except by trail, with only a few roads touching its valley borders.

But in spite of these handicaps steady progress was made. The fire ran only 6,700 acres on September 8, and 3,500 acres on September 9. More than 500 fire fighters were at the battle front. Seventy-five miles of fire line had been built and successfully held. The south side of the fire was under control. New camps were laid out and fresh men ordered. The situation was still serious.

Saturday, September 10, was just another torrid day on a big fire—but before the blood red sun was to sink into the Pacific that night the men in the Matilija were to pass through a baptism of flames that few will ever forget. All hell broke loose at noon. A forty-mile gale swept over the mountains carrying the fire eastward across the Sespe River into the Pine Mountain Lodge, Mutau Flats and Devil's Heart country. In one hour the wild flames traveled twelve miles on a front five miles wide. When the wind died down that evening the fire area had increased to 80,000 acres with a circumference of 240 miles.

"I've seen a heap of fires in my day," said one old ranger,

"and fought aplenty of 'em, too, but I hope I never live to see another blow-up like that. The smoke was blindin', the roar of the flames terrific, the very mountains shook underfoot. Man, it sure put the fear of God into you!"

The high winds continued, the humidity remained low, and the fire made spectacular runs into the higher, rougher and more inaccessible back country, jeopardizing the safety of fire fighters and increasing the difficulty of control. Fire lines were lost, camps destroyed, men and pack trains trapped by the flames. On September 11, 21,850 acres were burned, 18,800 on September 12, 18,250 on September 13, and 15,750 on September 14—a total of nearly 75,000 acres in four days, which combined with the area already burned made a vast boiling smoke-pot covering 155,000 acres.

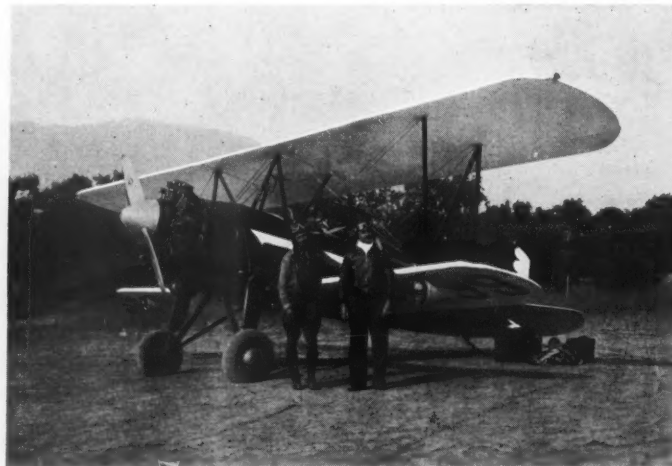
But still the fight went on, with 1,200 weary men battling from dawn to dusk and from dusk to dawn—as gallant a stand as was ever made against the arch enemy of the forest. Conditions improved slightly on September 15 and 16, when the new area burned was held to 20,000 acres. But on the 17th the fire demon took new life and in a magnificent dying splurge spread destruction over 44,000 more acres.

Then came a change. The gales ceased, the humidity rose, and experience, system and perfected organization, that had been backed to the wall by the hostile elements of nature, assumed command and staged a great drive to victory. So it was that

each succeeding day the fire burned a little less, was pinched in a little closer, until on September 19 it was finally brought under control.

Perhaps the magnitude of this great fire may be better understood by the following brief summary of the outstanding facts connected with it. The total area burned was 220,000 acres; 2,500 fire fighters were used, 1,200 in one day; 302 miles of control line were dug out; the largest number of fire camps at one time was seventeen, of which twelve had to be supplied by pack train; three camps were destroyed by fire, and pack stock used amounted to 130 head. Two airplanes were used, and it required nearly three hours to fly around the circumference of the fire. Five portable radio sets were used. There were 104 Forest Service officers on the fire, representing eight different National Forests and the Regional Headquarters in San Francisco; there were fifty trained fire officers from State, county and private forestry organizations. The cost of suppression exceeded \$85,000. The Secretary of Agriculture offered a reward of \$1,000 for information leading to the arrest and conviction of the person who started the Matilija fire, but as yet the culprit is undiscovered.

One of the interesting and unusual sidelights of the fire was the many different forms of transportation used. These varied from crawling on hands and knees through the dense chaparral on steep mountain slopes to flying over the fire in an airplane at 100 miles an hour. Horses, boats, auto-



Pilot Paul Mantz (Right) with Forest Inspector P. P. Pitchlynn ready to scout the Matilija fire. It required nearly three hours to fly around the circumference of the fire. The same plane will sow 18,000 pounds of seed over the burn.

mobiles, gasoline speeders, tractors and railroad trains were also employed to transport men and equipment to and from the battle front.

No estimate of the loss caused by the fire has been made. As it was confined largely to the back country, the property damage was small and limited to a few cabins and the Reyes Peak Fire Lookout which were burned. The real loss will not be known until the winter rains come, for the burned area was valuable watershed territory. Should torrential storms occur over the fire swept zone, millions of dollars of damage may be done to municipal water systems, irrigation works and farm and orchard lands in the rich valley regions below.

Five principal watersheds, important to the water supply of eight cities and towns and large areas of citrus orchards and irrigated farms, suffered from the fire. In the Santa Ynez, 9,200 acres, practically the entire watershed of the Juncal dam, built at great expense to furnish water to the millionaire colony of Monticito, was burned over, together with 8,850 acres contributing to Gibraltar dam, the source of Santa Barbara's water supply. On the Sespe watershed

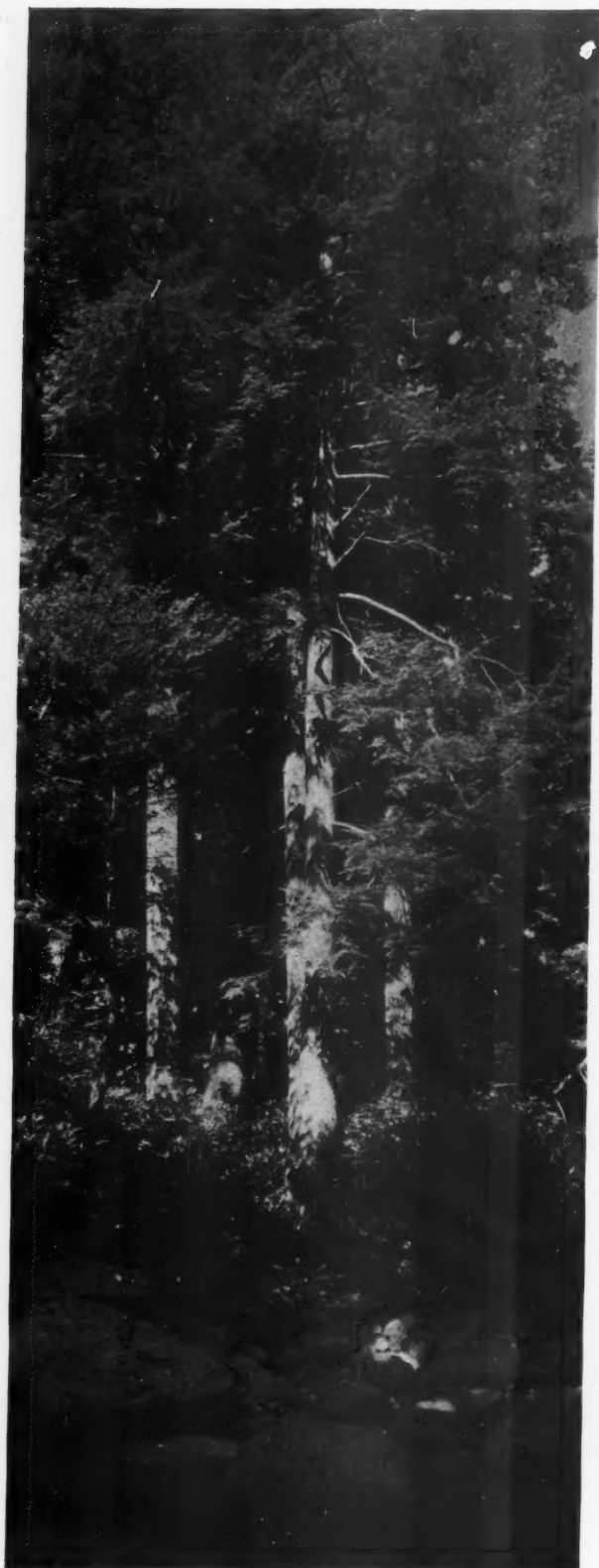
130,000 acres went up in smoke. Ventura River lost 57,500 acres, Santa Paula Canyon nearly 10,000 acres, and 4,000 acres burned on the Cuyama watershed. Santa Paula, Fillmore, Ojai, Ventura, Carpinteria and Summerland are other communities that will suffer from damage to their water supply. Already slight rains on the fire area have brought down flood waters laden with sixty per cent of silt.

Following a survey of the most important of the burned areas by experts from the Forest Service, county forestry and farm boards and water companies, plans have been made for the limited use of check dams to hold back flood waters and for the extensive reseeding of barren slopes. The first work, already under way, consists of reseeding 3,000 acres on each of the Santa Barbara and Monticito watersheds, together with experimental sowing on the Sespe watershed. Nine pounds of seed an acre will be sown, using a mixture of red mustard, black mustard, and sour and white clover. Paul Mantz of the United Air Service, Limited, at Burbank, California, who holds the Forest Service airplane patrol contract for southern California, (*Continuing on page 26*)



Photograph from Wide World Photos

Although there was no loss of life, hair-breadth escapes were of almost daily occurrence on the Matilija fire. This crew of twenty men have taken refuge on an open rocky point after being forced to drop their tools and run for their lives. They remained in this rough clearing for hours after the flames had passed.



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Gorgeously forested are the great mountains in the new Park area. Along the west prong of the Pigeon River are found these magnificent tulip poplars and hemlocks, mighty in height and spread of limb.

GREAT SMOKIES

MOUNTAIN THRONE OF THE EAST

In North Carolina and Tennessee,
Lies this Far-flung Parkland

By ROBERT STERLING YARD

THE Great Smoky Mountains National Park, which straddles fifty-nine miles of high mountain boundary between Tennessee and North Carolina, shares first honors with the greatest of America's western National Parks because alone it represents eastern landscape in finest expression; and the best of the original eastern forest. Its features are its lofty ridges, peaked and spurred, its plunging valleys, the grandeur and variety of wild mountain scenery within its boundaries, its wilderness solitudes, its innumerable waters, the splendor of its flowering, and its great areas of richly varied deciduous forest which the ax has not touched. It contains 667 squares miles of which nearly one-half is primitive. At its widest point it is eighteen and one-half miles.

What the loftiest, most startlingly beautiful and most gorgeously forested National Parks are to the West, Great Smoky Mountain National Park is to the East. Rising from a base altitude averaging 1,500 feet, its mountains equal in actual height above the valley floors those of many of the finest of the western National Parks as measured from their own base altitudes of 4,000 to 9,000 feet. This being the measure by which mountains are best compared, Great Smoky may fairly be ranked in stature with the Rockies, the Sierra and the Cascades. It is massed, ridged, canyoned and tumbled, often as confusingly as the high Sierra of California. And its heavy blanketing of forest has saved its ridge tops from carving, doming, and splintering which erosion has performed upon the bared summits of many western mountains of similar height. It has reserved to them the beauty of more gracious outline. Under different conditions, the Master Sculptor has here produced a vastly different but no less entrancing work.

I never return from contemplation of the dignified sombre ranks of upstanding giant conifers which constitute the high altitude forests of the far-western parks without rejoicing in the infinite variety and gracious posturing of the deciduous forests of the lower-levelled East. Great Smoky contributes many times the largest area of primitive forest, about 300 square miles, which ruthless civilization has left east of the Mississippi. It is the only fine example left of more than 600,000 square miles of mixed deciduous and coniferous forest which daunted the first Europeans who landed on American shores. Pitifully small compared with that, but what a prize! Everywhere else in the East original forest museum pieces are few, small and undiversified. There is no doubt that the primitive crest of the Great Smokies from end to end is the finest example of its kind left in America.

It will be seen that Great Smoky is a National Park by divine right—not at all, as some of its own people have

imagined, because it is the finest in the East.

The great Appalachian Mountain system reaches from New York to Alabama, both inclusive, skirting the Atlantic shore. It is older by millions of years than the Rockies, the Cascades and the Sierra; so old that few elevations remain exceeding 3,000 or 4,000 feet. It is a broad ribbon woven of many parallel ranges connected by cross ranges, and by tumbled mountains and hills which erosion has reduced during former ages from more continuous mountain forms. Its length from New York to Alabama is 1,000 miles, and its maximum width is 150 miles at a point in southwestern Virginia.

The climax of this vast system, the Great Smoky Mountains National Park, is very near the center of the East, lying directly south of Cleveland, Ohio, and almost exactly half way between Lake Erie and the Gulf of Mexico. It is nearer the Mississippi River than the Atlantic Ocean, and considerably nearer the northeast corner of Maine than the southern point of Florida. By motor highway, it is 750 miles from New York, 660 miles from Chicago, 780 miles from Palm Beach and 770 miles from New Orleans.

The National Park includes the entire inter-state boundary between the Big Pigeon River on the northeast, which rises on the slopes of Mount Pisgah near Asheville, and the Little Tennessee River on the southwest, which rises in the Balsams and the Coweets of the same inter-range valley—both finding a winding way to the Mississippi. Eighty hiked miles of its main ridge constitutes its axis, and there are numerous off-standing and parallel ridges and innumerable intermediate valleys, often of very great steepness and depth. Through every valley flows a stream.

The principal entrance cities to the park are Knoxville, Tennessee, thirty-eight miles over a fine road to Gatlinburg at the base of the mountains, and Asheville, North Carolina, by way of Waynesville. Gatlinburg and Bryson City are connected through the park by a motor road which crosses the high crest at Newfound Gap, 5,045 feet in altitude. This is almost the only motor road in the park.

The main ridge is called "Smoky" by the mountaineers because of prevailing mistiness—"a dreamy blue haze like that of Indian summer, or deeper," to quote Horace Kephart. It is continuously unbroken. Higher elevations in its outline became its mountains, depressions in outline became its



© Thompson Company

A trail party arrives triumphantly atop "The Chimneys." Featuring lofty ridges, peaked and spurred, plunging valleys and wilderness solitudes, the Great Smoky National Park straddles fifty-nine and a half miles of high mountain boundary between Tennessee and North Carolina,—a far-flung land of indescribable scenic beauty.

gaps. Those points which are conspicuous for various reasons are, with their altitudes, from west to east, as follows: Gregory Bald, 4,948 feet; Silers Bald, 5,620 feet; Clingmans Dome, 6,642 feet; Newfound Gap, 5,266 feet; Mount Kephart, 6,188 feet; and Mount Guyot, 6,621 feet.

Rising almost directly from Gatlinburg, midway of the central ridge but three miles north of it, joined thereto by a sagging cross ridge 6,000 feet in altitude, a great mountain stands like a captain before his company. Though not the highest, Mount Le Conte will always be the conspicuous mountain personality of this National Park.

Le Conte is a three-topped mountain of impressive height, five miles or more in apparent length, of gracious outline and commanding presence. Clothed from head to foot in rich garments of virgin forest, unconnected with other outlying mountains save only by lesser ridges, its personality grows with acquaintance. Its three summits have these altitudes: High Top, 6,593 feet; Cliff Top, 6,555 feet; and Myrtle Point, 6,500 feet.

The view from Mount Le Conte, overlooking more primitive mountain country than almost any other point east of the Rockies, has an advantage over the rest of the great ridge itself. It is far enough away to get much of it into range. From its summit two other lofty summits are promi-

nent, which make with it a shallow triangle fairly entitled to be called the mountain climax of the Park. One of these, to the west, is Clingmans Dome, the loftiest point in the great ridge, 6,642 feet in altitude. Eighteen miles easterly as the crow flies is the other, Mount Guyot, also of the great ridge, 6,621 feet in altitude.

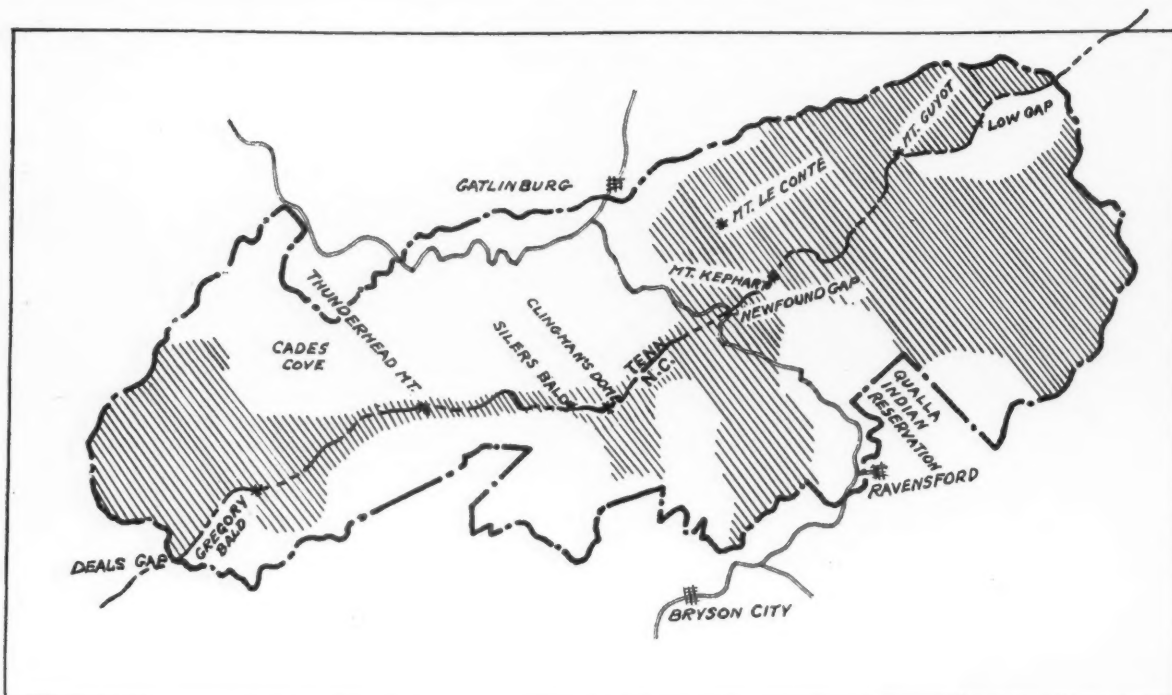
The three, Le Conte, Clingmans and Guyot, include in their component triangle and its tumbled environs the wildest and most impressive spectacle that eastern landscape has to show. I have seen few places where mountains appear to rise higher from their bases, nor where any view of mountains not snowcapped impart more marked a sensation of sheer beauty combined with the calm of stature and bulk.

The triangle of peaks has another importance. It differ-

pletes eighty consecutive miles of the highest primitive mountain crest in the east, a museum piece of inestimable value.

Considering first the eastern standard half, no feature of the main central ridge is more remarkable than its crest from Clingmans Dome to Mount Guyot. Parts of it have been called knife-edges because of their sharpness.

"Here is to be found," wrote Paul Fink in 1925, "territory that is totally unknown. Mountain peaks that in another setting would be famed for their height and beauty here are not even named, and their existence known to but few. Outside of a few surveying parties and a very limited number of hardened wilderness explorers, this part of Smoky has never been visited. Even the native bear hunters, experienced mountaineers all, avoid it, speaking of it as too wild for them."



The shaded portion of the above map of the Great Smoky Mountains National Park shows the primitive areas as taken from the report of the Joint Legislative Committee of Tennessee in 1925, and corrected to 1933. The principal entrance cities to the Park are Knoxville, Tennessee, thirty-eight miles north of Gatlinburg, and Asheville, North Carolina, sixty-four miles east of Bryson City.

entiates the extraordinary standard eastern half of the Park from the commonplace cutover half in the west. The line of division may not be precisely designated. Considering Gatlinburg as marking it, Sugarland Mountain and Clingmans Dome will be included in the eastern or primitive half. East of those points lies the real Great Smoky Mountains National Park, west of them its lands of lower altitude, of beauty common to many of its lesser mountain neighbors, and of no primitive or other distinguished quality. Yet there are balancing exceptions. The eastern half is not all primitive. On its far-eastern and southern borders are four considerable areas which have been lumbered. Nor is the western half all cutover. On its southwestern border is more or less an equal tract of charming uncut forest.

It is important that the summit of the ridge in the western half has been left uncut by lumbermen—not for preservation of its invaluable primitive exhibit, but because it grew no timber worth, in the market, the cost of cutting—for it com-

The late Horace Kephart, pioneer authority on the Great Smokies and author of *Our Southern Mountaineers*, expressed the belief that, up to 1924, not more than ten men had traversed the ridge from Lufty Gap to Mount Guyot. And no wonder. From Mount Kephart to Mount Guyot, a distance of twenty-two hiked miles, ridge slopes sometimes drop away for two thousand feet or more at angles less than forty-five degrees. There are places across which, for safety's sake, the venturesome traveler humps himself a-straddle, a foot hanging into each state.

Many a near-top basin is so tumbled as to become the subject of impossible tales or to acquire names like that rugged dimple in the side of Le Conte known as Huggins Hell. Ten miles east of Mount Guyot the ridge lowers in altitude, then drops away rapidly to the park's eastern boundary.

South of the high ridge, the eastern half of the park is rugged high primitive country dropping steeply from Hughes Ridge, Balsam Mountain and other (Continuing on page 32)



The Great Smokies won their name because of the prevailing mistiness, that "dreamy blue haze" which rises from the steep valleys, veiling the peaks in soft beauty.

© Thompson Company



Photograph by George Mass

The richness and glory of the flowering trees and shrubs is amazing. There are one hundred and fifty-two varieties of trees alone. Nowhere in America is such a variety of plant life found in an equal area.

WEATHERPROOFING CONSERVATION

By ALDO LEOPOLD

A LARGE part of that huge structure called the conservation movement consists of men, institutions, ideas, and properties dedicated to the proposition that the husbandry of certain organic resources is a public service, to be delivered free of charge to those citizens who wish to use them.

With the exception of timber and grazing on public forests, public use of these resources is free, or nearly so.

Hence the average citizen is taxed, to a greater or less degree, for services which he may not use in any direct or immediate sense. Hence in times of economic stress conservation services are in danger of being regarded by many citizens of full vote but scant understanding as a kind of altruistic luxury, to be curtailed to any requisite degree, or perhaps dispensed with altogether. The present economic depression has so far constricted the income but not the reasoning power of the average voter. At this time, however, there are evidences of a further change. In many quarters the attitude toward tax-reduction is coming to be not that of reasonable men confronted with the necessity of stringent cuts in the cost of government, but that of unreasonable men determined to slash anything and everything they can lay hands on, in a kind of blind vengeance for tax burdens which have become unbearable, but which may not have originated, to any considerable degree, in the items slashed. Taxpayer psychology, in short, is dangerously near to becoming mob psychology. If this mob spirit continues to spread, there is imminent danger that a large part of the conservation services laboriously built up during the past forty years will be crippled or sacrificed.

I will waste no time in trite admissions that these services should stand their share of the needed cut, or that they vary in value. Nor have I any recipe for counteracting the incitements-to-violence now current in the popular press. What will happen to conservation in this winter's legislatures was probably pre-determined by the wisdom or unwisdom of millions of individual actions during the past two decades, few of which can now be amended or recalled. My purpose, rather, is to urge a calm and unhurried re-examination of the structures of the conservation movement by conservationists themselves, with a view to building, or rebuilding, something more weatherproof.

The first move to this end is to seize the present emergency as an opportunity to re-establish some reasonable degree of solidarity between factions. It must be evident to all that there is some degree of unfriendly cleavage between many conservation groups, including bird-lover versus sportsman, park versus forest, game versus grazing, state versus federal, private versus governmental, economic versus esthetic. The

In periods of stress, leaders always arise to point out the weaknesses and opportunities of every movement. Mr. Leopold has done this for conservation. The present period when taxpayer psychology is imminently close to mob psychology, he shows, presents the danger that years of conservation service may be sacrificed in a blind vengeance directed against unbearable tax burdens. The times call for conservation stocktaking and self analysis,—"a calm and unhurried re-examination of the structure of the conservation movement by conservationists themselves, with a view to building or rebuilding something more weatherproof." Mr. Leopold's article is a dispassionate and thought provoking plea which every conservation group may well take to itself and translate into unity of action in solidifying and strengthening the whole conservation movement.--EDITOR

advent of a common danger ought to reveal the loss, delay, and risk inherent in many of these clashes, and the crying need for replacing or offsetting them, insofar as humanly possible, by an attitude of habitual self-criticism and mutual consultation — by some joint concept of a common cause.

Some of these clashes develop new ideas and represent progress. Most, I fear, are compounded of frailties and

are headed toward deadlock. Some merely manifest the will-to-power that trails at the heels of initial success in any human enterprise. Some involve automatic defense of old grooves of thought and action—symptoms that conservation somehow lacks the ability to ripen with age. Many of them, in my opinion, hark back in some degree, for their popular support, to a shallow cock-sureness toward the manipulation of intricate biological processes, a symptom that either research, or its interpretation, or the receptivity to its findings, has not kept pace with the march of events.

When some faction finally runs afoul of these deficiencies, it usually selects a scapegoat. Some individual or organization receives the blame for an impasse which has its roots in the errors, omissions, or limitations of a thousand others, including its critics.

It would be Utopian to imply that any human enterprise can ever avoid these things. It is not Utopian to assert that conservation has become too much beset by them, and that now is the time for a mutual stock-taking.

Here is just one example which shows why common cause is merely intelligent self-interest: The sportsman and bird-lover quarrel about whether animal life should be hunted with a glass or with a gun, while the farmer and stockman who own its habitat are inadvertently creating, in many regions at least, conditions which leave little life to be hunted with either. Which is more important, to fight to the bitter end about whether the quail is a songbird, or to labor jointly for some way to induce the farmer to leave food and cover for birds? To squabble about whether drought or guns killed the ducks, or to restore water and curtail shooting in order that fish, fowl, and fur may increase? These are not new questions. What is new is the hope that mutual danger may bring the realization that the other side cannot do all the conceding, that cooperation does not necessarily involve moral compromise, that it is possible for a sportsman to be respectable or a bird-lover tolerant, and above all that *technique is lacking* and must often be developed before cooperative agreement on paper can result in cooperative action on actual land, animals, or plants.

I have chosen this example from my own field because I

am surer of my facts, but I reassert that similar situations are common, and that now is the time for each faction to re-examine itself and lend a hand to its "competitors."

A second move is to rebuild public conservation so that as little of it as possible is left in the vulnerable position of a tax-supported "luxury," and as much of it as possible is placed in the invulnerable position of a pay-as-you-go public service, or in the still stronger position of a pay-as-you-go private enterprise under public regulation and control.

There are those who are urging just the opposite, who want even self-supporting activities placed on an appropriation basis. I am not competent to weigh the questions of fiscal policy which I suppose are involved, but if conservation is not permitted to grow where it can by its own earnings, I am afraid it will be many years before it grows at all.

The present degree of public subsidy is partly a matter of biology, partly law, and partly tradition or accident. The first two are largely immovable, but the last is not. We cannot change the biological fact that fish and ducks grow in water, or the legal fact that most waters are public, but if we build new waters, or make costly improvements in old ones, why not amortize the cost by charging the public which uses them an entrance fee, and the distant public that benefits from the enhanced flights a license? This is, on its face, a more weatherproof structure than anything built on general treasury appropriations, or on license-income alone. Just why should not protectionists, as well as sportsmen, work to this end?

Quail and pheasants live on farms, which are private property. We maintain expensive license-supported machinery to patrol and restock that property, but we now realize that these services accomplish little, because they do not and cannot provide cover and food, or regulate shooting on each parcel of range so that it does not overtax its producing capacity. The American Game Policy has already proposed that the states delegate these functions to the farmer, and let him reimburse himself by charging for shooting privileges. Several states have already made substantial progress toward this end. The result will be more game, but not less cost, because the state would still maintain the game warden and game farm service which now absorbs most game revenues. It is conceivable, however, that game law enforcement, as far as farm lands are concerned, could likewise be delegated to organized farm groups, the state closing any unit to all shooting whenever the laws are not observed, or excessive tolls are levied on the public, or other subversions of the public interest take place. European game laws are apparently enforced by the mutual watchfulness of landowners, and thus gamekeepers, without any specialized public police corps maintained for this purpose. I don't know whether this would work here, but it seems worth a small scale test.

If it would work, a large saving would result, and could be devoted to development, education, and research, instead of policing and restocking. Farm game would then be on all fours with agriculture, with this exception: The title to the resource would remain public, and commerce would deal in harvesting privileges rather than products. If in farming regions we could invest our hunting license income in county game agents instead of wardens and game farms, it is conceivable, that game management could some day attain the over-production which now exists in the agricultural field.

Forest and range lands present a more difficult problem, and publicly owned forest and range lands a very pressing and immediate problem. Where shall we find the funds for practicing conservation on the millions of acres of idle lands which are now reverting to public ownership, in a sort of economic avalanche, by reason of the insolvency of private farming and private forestry on them? We have so far

habitually expressed our pipe-dreams for conserving these lands in terms of public forests, public parks, public grazing ranges, public shooting and fishing grounds, public refuges, public camps, and the like. A few spots, to be sure, are of such outstanding value for some such dominant use as to leave their special destiny beyond argument, but as for the rest, the very names we use tacitly confess a competitive situation—a lack of coordination between conservation activities. In some states separate administrative overheads are maintained, and in many separate field forces, for game, forestry, fish and parks. The separate field forces sometimes coadminister the identical areas. We cannot change this by law or fiat alone, and there is certainly a limit to what one individual worker's mind can encompass. But we have before us, in the United States Forest Service, living proof of the fact that diverse resources can be administered by a single organization without permanent submergence of one by another. The merging of administrative forces presents great technical and political difficulties, but may none the less be an economic necessity.

Often, too, it is biologically expedient. Here is a forty good for planting pine, adjacent lies one good for nesting or feeding prairie chickens, and next one which needs re-flooding for fur, fish and ducks. It is doubtful whether these basic predestinations, which spread like a crazy-quilt over our "new Public Domain," will ever be more than slightly shifted by changing circumstance. It is certain that no hard-pressed public will pay, in the long run, for attempts to force the duck-marsh into silviculture, or the pine ridge into aquaculture, or for either to lie as an idle spot on a specialized unit devoted to the other. Still more certain is the wastefulness of separate administrations for each. Land classifications and economic surveys have, of course, long recognized these diverse physical aptitudes of land, but is it not now time to recognize the administrative, financial, and educational adjustments which they entail?

First of all, they call for leaders with something more than tolerance for lines of work other than their own specialties. Second, they seem to imply merged, not separate, organization of administrative agencies. Third, they lay on the private citizen the obligation to broaden his understanding. It will no longer suffice to let the women's clubs run the parks, the sportsmen the game, the fishermen the fish. All these changes are presaged in such recent developments as the Iowa Conservation Plan.

The reverted Public Domain is shotgunned with private holdings, usually likewise idle. It has heretofore been assumed that these must be bought out, by public appropriation, before administration as a conservation unit can start. Are we sure this is necessary? To wait for the necessary funds will shelve most projects indefinitely. Cannot some voluntary agreement be drawn whereby the owner concedes public control in return for some tax-status or pro-rata of revenue? This seems worth study and possibly trial.

The National Forests, but for debatable tourist roads, would be nearly self-supporting, and this despite the fact that game and fish license revenues go to the state, and general recreational use is free. Is this not good evidence that state-operated "Conservation Districts," managing *all* resources in accordance with the aptitude of each parcel of land, and charging for *all* uses, could pay somewhere near their own operating costs? If so, is it better for the public to postpone the organization of such districts until prosperous times, or to give the pay-as-you-enter idea a limited trial? Capital costs might be met, in some measure, from license income.

Political leaders have sensed the competitive atmosphere in conservation bureaus, and of course need no new reminders of the need for economy. They (*Continuing on page 48*)



"SUGAR PINE"

BY ANSEL EASTON ADAMS

Winner of the Fourth Prize

CALIFORNIA'S TREES

AWARDS for the best photographic studies of trees growing in California have been announced by the California Conservation Committee of the Garden Club of America and the Save-the-Redwoods League, as a result of their state-wide competition which closed September 21. The object of this competition, open to both amateur and professional photographers, was to stimulate interest in trees as a characteristic feature of the California landscape, and to encourage their preservation; to perpetuate through outstanding examples of photographic art something of the beauty and spiritual appeal of trees, whether standing as individuals or massed in forests.

Of the eight hundred photographs submitted, one hundred and sixty were exhibited for a month at the M. H. de Young Memorial Museum, in San Francisco, the final twelve awards being selected from this collection.

First prize of \$100 was awarded to Edward Weston, of Carmel, for "Joshua Tree in the Mojave Desert." Alma R. Lavenson, of Oakland, received the second prize of \$75 for "Snow Blossoms," while "Eucalyptus," by A. Kono, of Los Angeles, was selected for the third prize of \$50. Fourth prize of \$25 was awarded Ansel Easton Adams, of San Francisco, for "Sugar Pine." Three \$10 prizes, the fifth, sixth and seventh, were awarded Victor S. Matson, of South Pasadena, for "Desert Vista;" Albert Barrows, of San Francisco, for "Live Oak Arabesque;" and Willard Van Dyke, of Piedmont, for "Detail of Madrone."

Five honorable mentions were awarded. They went to Frank B. Saito, of Los Angeles, for "Pine Tree;" T. Kobayashi, of Los Angeles, for "Gum Tree;" J. M. Garrison, of Los Angeles, for "Smoke Trees of the Desert;" M. K. Curtis, of San Francisco, for "Coast Redwood," and to Gabriel Moulin, of San Francisco, for "Giant of the Forest."

Members of the Jury of Awards were: Dr. John C. Merriam, President, Save-the-Redwoods League; Mrs. Duncan McDuffie, Chairman, California Conservation Committee of the Garden Club of America; Eugen Neuhaus, Department of Arts, University of California; Lloyd La Page Rollins, Director, M. H. de Young Memorial Museum; Karl A. Baumgaertel, California Camera Club; Dr. Willis L. Jepson, author; and Lee F. Randolph, Director, California School of Fine Arts.

These prize winning photographs are reproduced in *AMERICAN FORESTS* through the courtesy of the Save-the-Redwoods League.



"A JOSHUA TREE IN THE MOJAVE DESERT"

BY EDWARD WESTON

Winner of the First Prize



"SNOW BLOSSOMS"

By ALMA R. LAVENSON

Winner of the Second Prize



"EUCALYPTUS"

By A. KONO

Winner of the Third Prize



By T. KOBAYASHI

"GUM TREE"

(Honorable Mention)



"DESERT VISTA"

By VICTOR S. MATSON

Winner of the Fifth Prize



"GIANT OF THE FOREST"

© BY GABRIEL MOULIN

(Honorable Mention)



By M. K. CURTIS

"COAST REDWOODS"

(Honorable Mention)



The calf stood, breathing heavily, feet braced apart, looking down over the edge at the great splash that immediately followed.

IT is entirely probable that among moose, as among men, individual members of the tribe are given to looking upon themselves as specially favored units; for man's part, he can always conceive readily enough of the neighbors' kids catching measles or scarlet fever, or of the fellow across the street slipping and cracking a leg or a rib.

Other folk are not careful enough in guarding against such things, but with us it is, of course, entirely different. Smitten with misfortune, when the first terrors of physical hurt have passed, our feeling is one of amazement. Like the stuttering man asked the time by a passerby, we wonder why, of all the other human thousands close at hand, we should be so picked upon. Thus egoistic men, and perhaps moose.

Be these things as they may, we came upon the mother of M'sieu Horns at a moment when she figured as one of those loosely permitted exceptions of a nature mother who guards the herd, but cares little for the individual.

'Poleon's soft warning hiss and the touch of his hand on my sleeve were the first intimation I had that something unexpected was at hand.

"I hear somet'ing, me ——" The voice was scarcely more than a breath, and we stood frozen, listening with utterly fixed attention.

Shod in skin moccasins, in which our footsteps made less noise than many a falling leaf, our progress over the weathered, rounded rocks of a dim trail lying along the border of a small lake had been so close to noiseless as to give little notice indeed of our approach to any creature ahead. The trail was a winding, wandering one, and the rough table land was rudely

"M'SIEU HORNS"

By EDWARD ORMEROD

grown over with brush and scrub. As we stood listening, there came on the quiet air a peculiar, guttural sound, hardly a groaning, yet very suggestive of that sort of note. 'Poleon was puzzled, as his face showed me. I too was quite at sea. The sound rose several times, then faded out into complete silence.

With no more noise than an owl's wings make in the night, 'Poleon moved forward slowly to a point where the trail turned a corner about a thicket of scrub. For the barest second he stood still as his vision swept the territory beyond, then his rifle was lowered and a silent lift of the chin and a wave of a hand summoned me to come and look.

Beyond the turn, in a bit of clearing on the rocky plateau floor, a cow moose lay on her side.

As I caught sight of her, the strange note sounded in our ears again. This stony floor above the lake, to which I have referred, was of that square-laid sedimentary rock, with here and there cracks or crevices cut sharp and clean in the general mass, some of them of considerable depth.

Sure of foot as her kind markedly are, in some moment of insufficient attention to her steps, this cow had allowed a front foot to slip into one of these openings. Alarmed probably at the gripping hold when the foot first stuck in the crack, she had wrenched and struggled. The bone of the leg had cracked—it still stuck up from the crevice, in which the split-hoofed foot was still held grimly tight. As we silently approached her head an insignificant muscular shiver shook her and her glazing eyes turned upon us.

"Look out," said 'Poleon. "I gotta shoot, me ——" We stepped back and the merciful crack of the gun put M'sieu Horns' mother out of all her undeserved earthly troubles.

Standing off, and much less discomposed than one might reasonably have expected, considering the plight of his mother and the smashing crack of the rifle, her calf displayed a very humanly adolescent failure to grasp the significance of all that was going on before him.

Viewing his gangling shape, 'Poleon's face broke out into the happiest of smiles. A great lover of babies and growing things was 'Poleon. Human or otherwise, the call of helpless or unsophisticated youth was to him an irresistible challenge. In a comfortable log cabin on the shore of a fine lake not so far away, ruled over by his good wife,



Sounding the low call to the moose out over the lake.

there was growing to satisfying stature in mind and muscle an astonishing number of children—yet was there always room in 'Poleon's big heart for more youngsters.

Grinning broadly and making soft low-toned sounds in his throat, he propped his rifle against a convenient stump and slowly approached the calf. Within a minute or two he had the creature nosing at his outstretched hand, and soon after had an arm about the awkward neck and was rubbing the horny excrescences that would one day develop into the stately horns of adult life.

"Aha!" 'Poleon laughed, at the calf's evident pleasure at all this. "M'sieu Horns, eh? Ee lak dat ver' much! Yes,

rock edge, and in an instant 'Poleon, with many a twisting and flinging of arms, was spread-eagling for the three or four feet of water at the cliff's foot.

"Mon Dieu!" his voice rose to a laughing screech—"I am goin' for drown, sure!" The calf stood breathing heavily, feet braced apart, looking down over the edge at the great splash that had immediately followed.

It was late in the second summer after that when I again met M'sieu Horns. 'Poleon had seen him many times, recognizing him from others of his kind with exactly the same assurance city men display in distinguishing one man from another. I had changed to the rear place in our canvas-



"M'sieu Horns" turned and regarded us very deliberately, as he munched the succulent bits of lily root, quite plainly resenting our disturbing of his quiet meal.

sir! Ee don' care much for ees poor modder, non? Ees goin' leave 'er pretty soon anyhow, you bet!"

"M'sieu Horns!" This was the christening, and it held, to the end.

A few moments later the friendly embraces had developed into a wrestling bout. Pugnacious, as are all young bulls, M'sieu Horns developed an amazing skill at twisting and turning, and especially at short-range charges with that outrageous head of his as the battering ram.

While I filled a pipe, seated on a log enjoying this unexpected show, the battle grew wider in range. In a moment 'Poleon stood on the very brink of the rock edge over the lake, preparing to ward off or receive the next advance of the calf. It came, and he side-stepped it, clutched unavailingly at the gripless withers of the beast who turned aside at the

covered canoe, giving to 'Poleon the front position and long paddle. Coming silently around a growth of tall reeds forming a point at a side of a lovely bay of lilies and pads, I saw what at first glance looked like a rounded, weathered stump showing above the water.

Looking at 'Poleon to see why he had stopped paddling, I caught a grin and looked quickly at the stump again. It was moving, and in a moment with a tremendous upheaval from the quiet depths there was lifted an enormous head and a pair of giant horns, pouring water and draped comically with lily stems and weeds. It was a moose, hunting with head under water for lily roots or bulbs. 'Poleon's grin and whispered "M'sieu Horns!" established his identity at once.

Very deliberately the big fellow viewed our canoe. Then he turned quietly toward the shore. (Continuing on page 47)



Long, long ago—in 1570 B. C.—an Egyptian Queen brought foreign seeds and plants to her own country, and this historical fact is recorded in bas-relief on the Meyer Memorial Medal, awarded annually and shown above.

TREE IMMIGRANTS

CITIZENS FROM FAR-AWAY
LANDS SWELL THE RANKS OF
NATIVE TREEDOM

By DAREL MCCONKEY

(Photographs by the Bureau of Plant Industry, unless otherwise indicated.)

WHEN Queen Hatshepsut of Egypt greeted her ship newly returned from the Land of Punt—generally believed to be the east coast of Africa—she found that its cargo included bundles of incense, which, she was told, came from trees grown in that far southern country.

The queen forthwith sent her coastwise mariners back to the Land of Punt for specimen of trees and seeds so she might produce this aromatic wood in her own gardens. By no means ignorant of the publicity value of such a venture, she caused sculptors to accompany the expedition, and, when

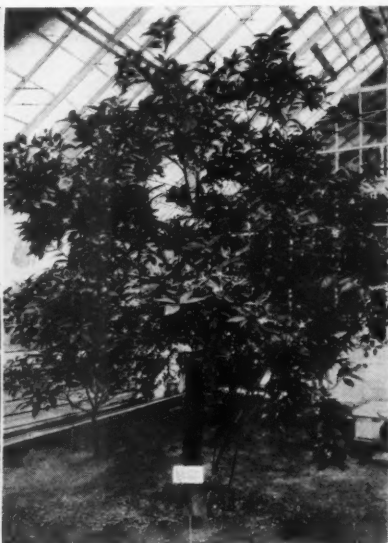
they returned, they carved and set up a bas-relief at Luxor, showing "Egyptian gardeners loading the boat with incense trees in tubs and piling its decks with seeds."

That was in the fifth Egyptian dynasty, and is dated by modern historians at 1570 B. C. It is the earliest historic record of foreign plant introduction. The face of the Frank Nicholas Meyer memorial medal of honor for foreign plant introduction, awarded each year in America, is a reproduction of Queen Hatshepsut's bas-relief.

The source of all seeds disseminated by man and nature to



The Chinese or Siberian Elm—one of the most popular of the tree immigrants, which has made itself perfectly at home in the United States.



The parent Navel Orange at Washington, D. C. This had its genesis in a Portuguese grower's grove in Bahia, Brazil, and came to America in 1867.



The Chinese Ailanthus, or "Tree of Heaven"—a native of the Molucca Islands, four degrees south of the equator near Borneo, now common in America.

Pennsylvania Dept. of Forests and Waters.

all parts of earth may be regarded by one school of thought as having originated with the incident in the second chapter of Genesis: "And the Lord God planted a garden eastward in Eden . . . and out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food."

Abraham was one of the early tree planters, but whether he obtained his seeds from the wilderness of Paran for planting in Bersheba you may yourself conclude from the quotation taken from the twenty-second chapter of Genesis: "Then Abimelech rose up, and Philcol the chief captain of his host, and they returned (from the wilderness of Paran) into the land of the Philistines. And Abraham planted a grove in Beersheba."

Solomon may have imported seeds. In Ecclesiastes he says: "I made me gardens and orchards, and I planted trees in them of all kind of fruit."

The curtains of the past swing their vague folds over succeeding processions of restless wandering men for centuries thereafter, and the searcher is rewarded with no glimpse of the packets of seeds, the carefully wrapped and tended plants that must, by reason of tastes in food, sentiment, and the desire for beauty of perfume and blossom, have been transported from point to point on the globe.

Then, with its vision of Oriental monarch's splendor, there appears on the pages of Ser Marco Polo a description of "The Green Mount" of Kublai Khan, one of the earliest arbore-tums ever planted.

"Moreover on the north side of the Palace," relates Polo, "about a bow-shot off, there is a hill which has been made by art (from earth dug out of the lake); it is a good hundred paces in height and a mile in compass. This hill is entirely covered with trees that never lose leaves, but remain ever green. And I assure you that wherever a beautiful tree may exist, and the Emperor gets news of it, he sends for it and has it transported bodily with all its roots and the earth attached to them, and planted on that hill of his. No matter how big the tree may be, he gets it carried by elephants; and in this way he has got together the most beautiful collection of trees in all the world. And he has also caused the whole hill to be covered with ore of azure, which is very green. And thus not only are the trees all green, but the hill itself is all green likewise; and there is nothing to be seen on it that is not green; and hence it is called the *Green Mount*; and in good sooth 'tis named well."

"On top of the hill again there is a fine big palace which is all green inside and out; and thus the hill, and the trees

and the palace form together a charming spectacle; and it is marvelous to see their uniformity of color!"

Always, where pioneers have gone, where new habitations were carved out in a virgin land, have traveled favorite seeds. The flower that recalls a bit of the homeland, seeds of familiar vegetables, trees that harbor a sentiment of nativity. This activity, as Dr. W. A. Taylor, chief of the Bureau of Plant Industry, United States Department of Agriculture,

has noted, began in America scarcely two weeks after the arrival of the first settlers on the Island of Jamestown in 1607.

"It has been carried on so naturally and gradually that few people realize the role it has played," he said. The early Franciscan fathers, for instance, planted the mission fig, the mission olive, and the mission grape in California, where they persist today.

Certain tree citizens have become "naturalized", have accepted this new land, and grow in competition with plants already in the field. The "Chinese" ailanthus or "Tree of Heaven" is one of these. It is a native of the Molucca Islands, four degrees south of the equator near Borneo. It came to America via China and England. The white willow and white poplar are from Europe. The black or Lombardy poplar came from Persia, as did the China tree or umbrella tree, a popular ornamental. The mulberry is a native of Asia. The peach and apple had their beginnings in China. Many of them seem to us native, but they are only naturalized, just as the American citizen of today is naturalized, while the Indian is native.

In a letter written by President John Quincy

Adams, in 1827, to consuls in various lands, he asked them to "introduce into the United States all such foreign trees and plants of whatever nature as may give promise under proper cultivation of becoming useful."

One of these letters was forwarded to Dr. Henry Perrine, then consul at Campeche, Yucatan. The idea appealed to Dr. Perrine, who introduced logwood and sisal hemp in 1830. Dr. Perrine had one of the first plant introduction plantations in America, a township of land furnished by federal grant in 1838, on the southeastern extremity of the Peninsula of East Florida. He wanted to cultivate logwood, valuable as dyestuff, and was interested in ginger, rubber, tumeric and indigo. The introduction of mango and avocado trees for fruit production is credited to him. He was killed on his plantation by an uprising of Seminole Indians in 1840.

Tree history, like human history, has strange sequences. For instance, a Portuguese orange grower in Bahia, Brazil, be-



The Date Palm—grown for 4,000 years in the historic valleys of the Tigris and Euphrates, was introduced in America in 1904. Acclimatized in our arid Southwest, it has led to the development of a great fruit industry.

tween 1810 and 1820, could have no means of knowing that when he walked through his plantation of Portuguese *laranja selecta* oranges one morning and found a bud sport that its descendants would develop into the most valuable trees ever introduced into the United States. The new orange tree, created by nature in a moment of caprice, thrived and bore superior fruit, remarkable for the presence of an indentation opposite the stem attachment having the appearance of a navel. The fame of the Bahia navel orange (which should be its name, and would be except for another historical accident) spread to Washington, and plants were ordered in 1867 by the late William Saunders, superintendent of buildings and grounds for the United States Department of Agriculture.

The first planting in the United States, outside of Washington, was made at Riverside, California, by Mrs. Eliza Tibbets, in 1873. She named the plant the Riverside navel orange. Other growers, seeing its possibilities over a more than local area in the State, renamed it the Washington navel orange, because it came from the National Capital, and the name is the current one of today. It is the leading citrus variety grown in California, bringing in millions of dollars of revenue annually.

Foreign plant introduction as a governmental function was begun in 1897. The late B. E. Fernow, chief of the old Division of Forestry, mother of the present Forest Service, became interested in introducing trees for reforestation purposes. Dr. David Fairchild, grand-old man of plant introduction, was then in the Orient, and was given the task of finding Oriental trees suitable for bolstering American forests, which had been on the wane since the first intensive logging operations were started on the Columbia River in 1820 by the Hudson's Bay Company. A year later Secretary of Agriculture James Wilson broadened the field to include food plants, even stressing the need of them, since they would develop more quickly. It would do no harm, he added, to experiment with trees, due to the necessarily longer period of their development.

Introduction of the date palm as early as 1904 and its development as a leading fruit industry in the arid Southwest leads in retrospect down the lanes of history for an interlude with Arabs and camels and desert oases. The date palm

is one of the first plants ever cultivated. It has been grown for 4,000 years in the valleys of the Tigris and Euphrates, being native to northern Africa and Arabia. In the seventh century, A. D., Arabs invaded the western Sahara region and Barbary and introduced camels into popular use in the Sahara. The "ships of the desert" made it possible for oasis-

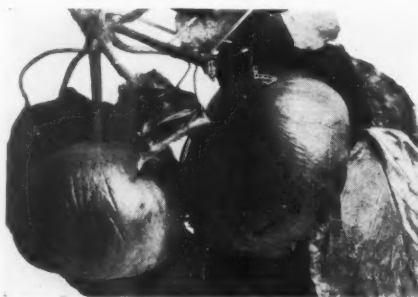
dwellers to grow dates, transport them by camelback to the markets, barter for necessities, and journey back across the sands to their homes. This economic revolution made date culture the most important industry in the Sahara, and so it remains today. The trees, for which no heat is too great and no air too dry, shelter and partially shade other fruit trees, including the olive, apricot, peach, almond, pomegranate, fig, and jujube, as well as scanty vegetable gardens. It is hard for people of a well-timbered land to realize the importance of the date palm to Saharans, for not only is it important for its fruit, but furnishes the only lumber available in the desert. The Moors introduced date palms into Spain, and the first such

plants in the New World were carried by Spanish missionaries, discoverers, and conquerors. Able to withstand more alkali in the soil than any other useful plant, date palms have been grown successfully in Arizona and adjacent states, where half a million dollars annually is derived from their

culture. Persian Gulf dates have also been introduced in Arizona, and grown with profit for their fruit, and as shade and shelter for grapes and other fruit crops.

No account of tree travels from the far curves of earth that they might dig their roots into American soil would be complete without mention of Frank N. Meyer, whose memorial medal has been mentioned. He was associated with the Division of Foreign Plant Introduction in the capacity of explorer from 1905 until the fateful night of June 2, 1918, when he disappeared from a boat on the Yangtze River, in China, and was never seen alive again. He was the star explorer of all government searchers after useful plants.

One of the most popular tree immigrants is the Chinese elm, known also as the Siberian elm. Its success was established through growth of seeds Meyer sent direct from China in 1908. It has proved more valuable under a greater variety of climatic and soil conditions than any tree yet introduced.



Nuts from which one of the most valuable oils of commerce is expressed. The Tung-oil Tree, an alien from China in 1905, has now a firmly established place in American soil.



The Arnold Arboretum.

A great old Ginkgo from the Orient. This tree, whose lineage in the plant world traces back to antiquity, is one of the most popular of all the immigrant train because of its hardiness, its outstanding beauty of form and color, its resistance to disease and its general adaptability.

It weathers the cold of the northern states, and survives the drought, alkali, and hot winds of the Great Plains, where desirable shade trees are scarce. A beautiful ornamental tree, the Chinese elm may be used as a windbreak if its lower branches are permitted to grow.

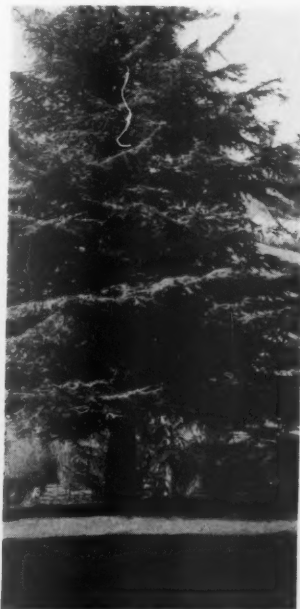
Bamboo is one of the most promising of all foreign plants introduced. Early travelers, attracted by the beauty of this unique plant, and by the multitudinous uses to which it is put by Orientals, brought plants to the southern and Pacific coasts many years ago. Dr. Fairchild pioneered for the government with a shipment of bamboo from Japan in 1903, and Meyer sent a cargo from China in 1908.

Bamboo is not a tree, but a grass. It has more uses than any plant in the world, and believers in its culture declare that the future will see it in great commercial and domestic use in America. This unique plant is valuable as an ornamental, as anyone will agree who has traveled north or south through Savannah, Georgia, and has come suddenly upon the Barbour Lathrop plantation there, with tall, pale green stalks standing seventy-five feet high, after wearying his vision on pine and cypress for interminable miles to north and south. Certain species are edible, tasting somewhat like sweet corn when properly prepared.

The Barbour Lathrop Plant Introduction Garden at Savannah grows many species of bamboo, but the largest plantation in the United States is on Avery Island, near New Iberia,



The tree-like stalks of Bamboo — introduced from Japan in 1903. While truly a grass and not a tree, Bamboo has more uses than any plant in the world.



United States Forest Service.

The Atlas Mountain Cedar, a beautiful alien from northwestern Africa, after trial as an ornamental, has won its place along with several other true cedars and exotics from far lands.

Louisiana. E. L. McIlhenny, tabasco sauce king, on his 1,700-acre plantation has more than 100 acres in bamboo.

A fad for Oriental nuts in "the gay nineties" led to one of the most serious searches for foreign trees ever inaugurated by the Federal Government. This fash-

ion, long since outworn, led to the introduction of chestnut blight into the United States from the Orient, though its origin was unknown for many years. The blight was first discovered in the Bronx Zoo, New York City, in 1904. When the magnitude of the blight



United States Forest Service.

Norway Spruce now seems almost native to New England, and thrives further south than our own native white and red spruce.



Putnam Studios.

Brought from Australia to California, Eucalyptus is the Blue Gum of Victoria and Tasmania, a valuable ornamental and timber tree.

menace was apprehended, renewed interest was aroused in foreign exploration for trees to replace the waning chestnut. From 1903 to 1912 numerous lots of Chinese and other chestnuts were received, grown, and distributed in the course of governmental plant introduction endeavor.

Chestnut specimens sent by Meyer from China in the spring of 1913 revealed that the blight came from the East. He gathered blight-resistant Chinese chestnuts, and plantings were made. The disease, meantime, spread westward, becoming really serious when it invaded the tannin-producing regions of Virginia, the Carolinas, Tennessee and Georgia. It was not until 1927 that R. Kent Beattie, principal pathologist for the Bureau of Plant Industry, was sent to Japan to canvass that country for plantings which might replace the doomed chestnuts of this country. He returned in 1930, having sent back several bushels of seed and scions of ninety named varieties, valuable for nuts, tannin and timber.

Much experimentation is being done with seeds sent from the Orient by Meyer, Beattie, P. H. Dorsett, and Joseph F. Rock. The future of the nuts and tannin produced by these trees in America awaits years of planting and experiment, as the government seeks to rebuild, with trees from the Orient, a forest growth wiped out by a pest from the Orient.

Mr. Rock, who is now poking about in Oriental forest fastnesses, was probably the first white man, with an appreciation of its importance, to see the chaulmoogra tree in Siam and Burma in 1919. Chaulmoogra oil, which came into prominence through its use as a palliative for leprosy in Hawaii about 1910, had previous to that time been

(Continuing on page 46)

THE BATTLE OF MATILIJA CANYON

(Continued from page 5)

and who flew over fifty hours on the Matilija fire, has been awarded the contract for sowing 18,000 pounds of seed from the air over the burn. Hand labor by unemployed men will also be used.

So much for the bare facts of the Matilija fire. There is another and more human chapter which can not be told in terms of acres burned or dollars spent. It is the story of men and women on the fire line and on the trail who looked death in the face and lived to tell the tale. It is a story, too, of wild life driven from its haunts and crippled or killed by the onrushing flames. Perhaps these things are not so important as valuable watersheds destroyed or money spent in fighting fires, but to some they will speak louder and with infinitely more appeal than any economic figures crowned with a dollar sign.

Despite the roughness of the terrain over which the fire ran—deep canyons, precipitous rock cliffs and boulder strewn slopes—and the dense impenetrable brush cover through which the flames swept in spasmodic and spectacular waves, there were no lives lost and only one major injury. Minor burns, sprains, cuts, exhaustion and infection by poison oak were common but not serious.

During one of the last days of the conflagration, a fire fighter fell over a forty-foot cliff in Agua Caliente Canyon, breaking his leg and incurring possible internal injuries. He was given emergency treatment and then carried several miles on an improvised stretcher to a nearby fire camp. From this camp to the hospital in Santa Barbara was seventy-five miles by rough roads over a circuitous route through the mountains. But quick action was essential, so the Forest Service officer in charge used the following novel method of transportation. The injured man was placed in an automobile and taken to the Juncal dam tunnel through which runs the pipe line that supplies water to the city of Monticito. Alongside the pipe line there also runs a narrow gauge railroad over which gasoline driven tram cars were operated during the building of the dam. The injured fire fighter was placed upon one of these cars and transported through three miles of tunnel to the portal where an ambulance was waiting to carry him to the hospital. Thus hours of rough agonizing travel and sixty miles of distance were saved and prompt medical attention secured.

Hair-breadth escapes were of almost daily occurrence on the Matilija fire. No heroics these, but stern realities with life and death in the balance. One misstep, one error of judgment on the part of leaders and scores of men faced certain destruction. Full well they knew the tricky merciless enemy with its cruel searing tongues of flame and acrid blinding smoke—a relentless foe that seizes upon every advantage of wind and weather, that raises no white flag of truce, that is never beaten until the last red spark is dead.

In the first great run of fire, late in the afternoon of September 7, Supervisor Nash-Boulden of the Santa Barbara Forest and forty-five fire fighters were trapped at the Ortega Ranch on the Matilija. Successive gusts of wind carried the fire across the canyon and down stream until they were circled by flames. Only a small part of the wide, flat creek bottom remained unburned and here the Forest officers mustered their crew, while the Mexican fire fighters knelt in terror and with trembling fingers counted their beads. But cool heads prevailed, and as the fire upstream died down the panic-stricken men were headed into the fresh burn and there remained in safety, lying in the smoking hot ashes, until danger had passed.

Another thrilling experience was that of a crew of sixty-five men in the Last Chance region, under Walter Emerick, fire warden for Ventura County. Twenty men of this crew left camp early in the morning to fight the fire in the Hines

Peak country. Late in the day the wind fanned the fire into a raging inferno that swept down from the north side of the mountain. Dropping their tools, they ran for their lives through the smoke and flames to an open rocky point on which they huddled and helplessly watched the fire rush down the canyon toward the Last Chance camp where forty-five more men were working. Happily the men down the canyon saw the fire coming in time to backfire a line previously cleared around the camp, which saved them from sure death.

But it remained for a woman to have the most harrowing experience on the Matilija fire. Mrs. Harry Hunt, of Ojai, has long been a packer and hunter, can throw a diamond hitch as well as any man, and knows the back country trails of the Topa Topas like a book. All during the fire she ran a string of pack horses carrying supplies to isolated camps and rendered other valiant service.

On the day of the Last Chance blow-up, Mrs. Hunt, with one man as helper, was coming up the canyon with a loaded pack train of eight animals. Suddenly two half-crazed fire fighters came bursting down the trail frantically shouting that the fire was coming. Knowing that there was no hope of escape down the narrow treacherous canyon trail, Mrs. Hunt succeeded in calming the men and herding the whole outfit into a small opening in the dense chaparral. Here the onrushing fire roared over their heads. Suffocating smoke and gas enveloped them in clouds. Saddle blankets, tarpaulins and even the very clothes on their backs caught on fire and had to be beaten out by hand, while the horses, to which Mrs. Hunt and the men clung in desperation, plunged and screamed.

So much for the human side of the story with its happy endings. But the tale of what happened to the wild game and birds in the Matilija is more tragic and withal heart-rending. Practically all the Sespe State Game Refuge was swept clean. So rapid was the spread of the fire, so dense the smoke and so cruel the flames that the bear, deer and other animals and game birds were bewildered and panic stricken, not knowing which way to turn or where to go. During one sudden spurt of fire, the men who were forced to flee to a barren rocky point to save their lives, tell how they were joined by two deer, a fox and a bobcat. The animals appeared unafraid as they stood beside the men waiting for the fire to burn itself out. When the flames subsided each went his own way.

How great was the destruction of wild life by this fire no one can estimate, but some indication of the toll it took may be gained from the fact that as many as eleven dead deer were found huddled together in one spot, and along a few miles of trail a dozen fire-singed carcasses were seen. Perhaps in all one hundred, two hundred, or even five hundred or more deer were burned to death—who knows? A survey of the fire area by officials of the State Fish and Game Commission showed that raccoons, opossums and skunks also suffered. Doves that were suffocated by fire gasses were found, and it is estimated that half the quail, California's State bird, in the area were killed. The trout in the mountain streams will suffer severely this winter, if in fact they are not all killed, when the rains bring down the ashes and lye from the burned areas into the creeks.

As the old ranger said one night when he sat on a rocky point in the Topa Topas and looked out on a hundred miles of blazing fire line: "Well, I never thought I'd live to see such a blaze. But after this when anyone starts to tell me about the big fires he's seen and fought, I'll just look at him nonchalant like and casually remark: 'Say, Pardner, did you ever hear of the Matilija fire of 1932?'"



EDITORIAL

A House Divided

IS the erosion of our soils a national menace to be brought under control or an inevitable process of nature to be viewed with kindly and thankful complacency? On this question members of Uncle Sam's family appear to be divided. To the Department of Agriculture, erosion is a many-headed enemy that is mining away our soils with increasing and alarming rapidity and is running up a staggering bill against the country "for ruthless, unthinking exploitation of its land resources." But its continuance is not inevitable. "America can if she will," says the head of the Agricultural Department, "show the world that man can possess without destroying the land."

"Already in this country," says Secretary Hyde, "21,000,000 acres have gone entirely out of cultivation because of destructive erosion. This exceeds the total area of arable land in Japan proper. But far more than 21,000,000 acres has been impoverished by the slower type of sheet washing, which carries off a portion of unprotected slopes every time there is enough rain to cause water to run downhill. * * * *

"Erosion strikes at the vitals of civilization. It is the problem of the farmer, the fisherman, the builder of waterways and reservoirs, the business man, the legislator—the problem, in short, of every thinking citizen of the nation. In part an individual problem for the farmer, it is also in large part a problem for community, state, and national action. In the permanent improvement of waterways and water supply, in the conservation of soil resources, in our attempts to achieve a balanced agricultural production, and to maintain an industrial civilization, our efforts must begin on the land."

Quite a different picture of erosion is given by Messrs. Stabler, Holland, and Deeds of the United States Geological Survey, Department of the Interior, who, in a published statement a few weeks ago minimizing watershed protection on the Public Domain, join in saying:

"Erosion is a fundamental process of land sculpture that has been continuous through the ages with general resultant benefit to mankind. To it may be attributed the fertile valleys that are the mainstay of agricultural development and, in contrast, the scenic wonders of the hills and mountains.

"Locally and temporarily, floods and erosion cause inconvenience and expense. It is an open question, even on a local and temporary outlook, whether erosion on the remaining public domain exerts an influence mainly detrimental or mainly beneficial to human activities.

"Widespread efforts to control erosion there would in-

volve costs out of all proportion to the benefits derived. On the other hand, normal range management may be expected to have a tendency toward such limitation of erosion on the public domain as is practicable."

The statements quoted throw into relief a wide difference in scientific viewpoint and administrative attitude between the two departments. The Department of Agriculture, appreciating erosion as a good servant when nature is in proper balance, long ago recognized it as a highly destructive agent when man throws nature out of balance by destroying its checks and controls on the action of water in flood. The Department has been at grips with the problem, attacking it aggressively through every channel of research and administrative action at its disposal. On the National Forests, for example, where large areas are quite similar to adjacent Public Domain, it has for many years been regulating surface use of the land to control erosion, and is bending every effort through research to improve range vegetation as a control measure.

Certain members of the Department of the Interior, however, seem to rest on the theory that there has always been erosion, always will be, and man can do little about it at a cost within reason. This theory of inaction, it may be observed, has reduced the Public Domain under the stewardship of the Department of the Interior to a condition on many areas where the single remedy of known range management comes too late to restore vegetation that will "have a tendency toward such limitation of erosion * * * * as is practicable." If the attitude expressed by Messrs. Stabler, Holland, and Deeds, as quoted here, is an accurate reflection of what is to be the continuing attitude of their Department, the wisdom of the Colton Bill in placing upon the Department of the Interior a mandate to control erosion on the Public Domain may well be questioned.

In any event, it is to be regretted that views so divergent and so confusing to public enlightenment upon an important national question flow out of Washington. The work of erosion and floods so clearly evident in almost every section of the country is a question of national concern and when the Government speaks on that subject the facts should be interpreted and presented with a unity of mind that leaves no room for public confusion or doubt. With information coming from one branch of the government saying that erosion is black and another asserting that it is white, what is the public to believe and how is it to form an intelligent conclusion?

Conservation Leaders in Congress



Frederic C. Walcott, of Connecticut, Manufacturer and Banker, whose love for Outdoor Life led him into Public Life and to the Senate of the United States

By G. H. COLLINGWOOD

BACK IN the years from 1869 to the early 80's when Frederick C. Walcott was an active boy in the prosperous farming and industrial area of the Mohawk Valley south of Utica, he probably thought no more of conservation than did his neighbors and playmates. The Civil War was still fresh in memory and the West was being rapidly settled. Utica was a lumberman's town and the value of New York's forest products had only recently given place to the greater value of Michigan's white pine. Deer and bear were fairly common in central New York, the seasons were marked by flights of ducks and geese, wood was the principal source of fuel, and the water wheel the great source of energy. Few people thought of the complex problems of forests and wild life which a rapidly growing nation would create as it shifted its center of interest from farming to manufacturing. But in the mind of this boy there was growing an attachment for the wild and the creatures of the wild that years of academic life in Andover and Yale, and a quarter of a century as cotton manufacturer and New York banker could not smother. After graduating from Yale in 1891, he demonstrated his ability in business and accumulated a modest fortune. Meanwhile, duck hunting along Long Island Sound and extended trips for bigger game in the far west took him away from the man made canyons of New York City and renewed that touch with nature which later distinguished him in public life.

Then came the World War, and the prosperous banker of forty-five plunged into Belgian and Polish relief work. For these services he received the Officers Cross from Poland. Later he was with the United States Food Administration in France where he received the Legion of Honor and where he established close friendship with Herbert Hoover.

The winter of 1916 found him in Warsaw where he witnessed suffering among non-combatants such as he never dreamed was possible. It added to his understanding of the difficulties which face the working man. These war time sights, coupled with boyhood experiences in the factory towns of the Mohawk Valley, and the panic which came after he graduated from college were in his mind last June when he addressed the Senate while it discussed legislation to relieve unemployment. "Unless you have actually been a

working man on a low wage," said Senator Walcott, "and realize that every week of your life you are not more than two or three or four weeks away from hunger if your job stops, you may not be able to realize the feelings of the man who is in that position today."

This is the man who emerged from the war to go into public service rather than back to the bank and the director's table. From 1921 to 1928 he was president of the Connecticut State Board of Fisheries and Game. During part of the same period he was State Senator, and also Chairman of the Connecticut State Water Commission. On July 1, 1925, he was elected President of the Connecticut Commission of Forests and Wild Life,—a combination of the State Commission on Fisheries and Game, and the State Park and Forest Commission. These two commissions retained their former functions and executive authority in each of their respective fields. The combined Commission on Forests and Wild Life was given the responsibility of coordinating land purchases to serve as state forests and wild life preserves and to administer the policies of forests, fish and game management.

Previous to Mr. Walcott's entry into this field, progress in the purchase of land for Connecticut's state forests was slow. During the twenty-three years from its inauguration in 1901 to 1925 the annual purchases averaged only four hundred and three acres. In his report of 1921, Mr. Walcott asked, "Why cannot Connecticut lead instead of being at the tail end of the procession in the movement toward beautifying and restocking her waste areas with wild life?" As if to answer this challenge he enlisted the game interests of the state and increased the average land purchases to 7,093 acres a year. Now Connecticut has over 60,000 acres of land in state forest and is well started toward the goal of 200,000 acres. Recognizing forest management as more than a function of the State and that annual tax levies upon growing timber are responsible for much premature cutting, he studied the forest tax systems of Germany and of north European countries. As a result he suggested new legislation which the Connecticut State legislature passed.

By employing the late John W. Titcomb, a nationally known expert of fish culture, Mr. Walcott put Connecticut's

game and fish administration on a more satisfactory basis. Always thinking how the advantages of outdoor recreation could reach larger numbers of people, he instituted the State practice of leasing streams and ponds for fishing. This was so successful that in 1929 the State extended the idea to shooting areas. Land and water so leased was stocked with game and fish. Now Connecticut has seven shooting areas of 50,211 acres and 160 miles of leased and stocked streams on which most of the fishing rights are owned in perpetuity for the benefit of the people of the State. The problem of making the outdoors more available and interesting to all people has long concerned him. In the last annual report he made to the Connecticut State Board of Fisheries and Game, he said:

"The scientists have added fifteen years to civilized man's life; the statisticians tell us that the workingman's hours of leisure have increased twenty per cent in twenty years. The old formula, 'Man works from sun to sun while woman's work is never done' is no longer true.

"Can man's added years be made worthwhile?

"The new leisure thus far means idleness, thoughtlessness and mischief, instead of self expression, self improvement and meditation.

"The trend from the country to the city, from the home to an apartment, from housekeeping to housebreaking, has become a migration, an invasion. Soft living is conducive of soft bodies and dull minds.

"Are we prepared for this gift of leisure? Are we intelligent enough to turn it to our advantage or shall the surplus earnings, our 'new cultural wage' be turned over to the manufacturer of pre-digested, automatic excitement? There is one effective cure for this tendency to idleness—back to the country, breathe fresh air, drink pure water, own some land and live on it.

"Our policy must therefore lie along the line of providing larger opportunity to return to the simple life of mountain, forest and stream. Our uplands have been stripped. Man's early food supply, the native animal life of forest and stream, which a century ago seemed inexhaustible and was so treated by the murderous wasterer, has been largely destroyed. We can never again depend upon an annual output of wild animal life as an important part of our food supply,

but with care we can save enough to add interest to the woods, fields and streams and an incentive to all who appreciate the best things in life to go afield for the benefit of body, mind and spirit."

This man who urged more opportunities for men to return to the simple life of mountain, forest and stream has sat before an open fire in the home of Frank Chapman, the ornithologist, and heard John Burroughs describe the flights of passenger pigeons. He has fished with Michigan's hardy pioneer, Captain William B. Merston, and has camped and

trailed with the late Stephen Mather and Charles Sheldon. He enjoys the National Parks and confesses that he is shocked at the way people go through these areas of natural wonder without knowing what they see. To him the animals are as important as the beauties of nature, and he fears the unconsidered "improvements" that may wreck the things they seek to develop. Many experiences have led him to the conclusion that nature, when left practically alone, pays the biggest dividends.

Succeeding the late Senator George P. McLean as Connecticut's Junior Senator, Senator Walcott took up the fight for the migratory birds which had long been legislative children of Senator McLean, and helped to accomplish the passage of the Norbeck-Andresen Act, providing a program of federal acquisition of wild fowl refuges. He worked for the appointment of a Select Committee of the Senate to study wild life conditions in the United States and to recommend legislation with which to remedy the on-roads of civilization. It was natural that Senator Walcott should be chairman of the committee



Senator Walcott welcomes every opportunity to get into the open, with a gun or a rod. Here he is showing a 37½ pound salmon from the Grand Cascapedia River in Quebec.

which includes Senators Harry B. Hawes of Missouri, Key Pittman of Nevada, Charles L. McNary of Oregon and Peter Norbeck of South Dakota. Their first report published in January 1931 presented convincing evidence that wild life is rapidly disappearing from America. At the same time the increase in the numbers of hunters and fishermen was another evidence of the desire of vigorous men to get into the open. The committee report showed that sporting goods manufacture and phases of recreation constitute an industry involving the expenditure of millions every year and with possibilities yet untouched. (Continuing on page 46)

A FOREST PAGE FOR BOYS AND GIRLS

Conducted by WAKELIN MCNEEL

GROWING CHRISTMAS TREES

HAPPY NEW YEAR! As the trees you planted add branch after branch so may your joys multiply. "I love to walk among the trees I have planted," writes Alvin. "They are only about waist high, after four years' growth, but nothing I have done gives me greater pride than the growing of these trees. I have been looking forward to the time when I could furnish the tree for our Christmas. This year I did it." Our wishes for the New Year carry the hope that boys and girls everywhere may discover the joys of achievement that came to this lad. If Alvin had dug his Christmas tree, root and all, and planted it in a box for use during the holidays and later transplanted it in a choice place in the garden or lawn, it would have lived to be an inspiring reminder of the first Christmas tree he grew. This practice of potting Christmas trees is becoming quite popular, and both sentiment and judgment support it.

Should Christmas trees be cut? This perennial question is prompted by the sight of the thousands of evergreens in the marts of our cities and towns; and we wonder if it isn't a wasteful, even threatening drain on the forests. Foresters say that the cutting of trees for the Christmas trade has no influence on the forest situation. Every sensible person regrets the indiscriminate cutting and the waste that the unregulated commerce of Christmas trees entails. But a light is shining on the horizon in the legislative action of many states and in an apparent growth in a sense of the propriety of things.

When you think about it, all the Christmas trees used each year could be grown on a few thousand acres of land. If each acre of cut-over land in Wisconsin alone furnished just one tree each year, and they could be marketed, it would go a long way toward supplying enough to meet the demand. Often trees are taken from crowded stands, and when thinning of this kind is

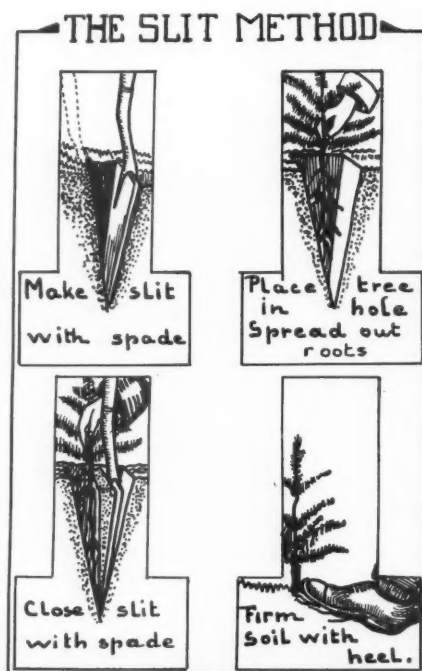


A potted
christmas tree.

done, the removal is an actual conservation measure, for the remaining trees are left with more room and light and the whole stand is better off. The Christmas tree is one of the forest's oldest gifts, and since it is so deeply imbedded in sentiment, the gift meets a real need. It would be better to stop using toothpicks than Christmas trees. It is estimated that about five times the area is cut for toothpicks as for Christmas trees. I believe that Christmas trees can be grown profitably on many farms that are advantageously located

with reference to the market. And one may ask what farm is not so situated in these days of automotive transportation? Most of the trees now found on the marts came from the timberlands of the North. The marketing of them entails a long haul. Some damage to the trees often occurs in transportation, and the harvest is made so long previous to the season that the fragrance of the foliage is gone and the needles soon drop off when brought into a warm room. Home-grown trees are superior in shape, can be delivered so fresh and fragrant that the foliage remains throughout the holiday season, and can be grown on idle land without any interference with farm work, after once established. These are some of the reasons that would indicate a splendid opportunity exists for boys to grow trees for the Christmas trade.

When I received the following inquiry, I promptly encouraged the boy to consider growing Christmas trees on a crop basis. He wrote, "If you were a boy living on a farm



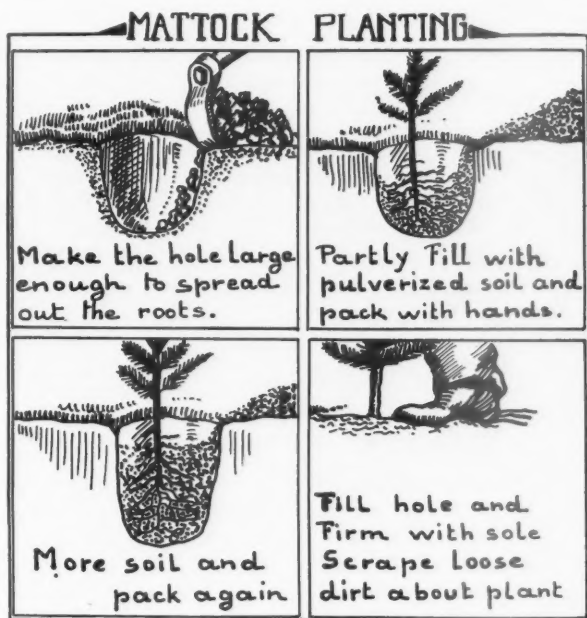
with some waste land, what would you do to make the best use of that land?" I looked at the shapely home-grown spruce that adorned the corner of the room and it seemed to send back the answer—"Grow trees like me, fragrant, fresh, and shapely, and people will go miles to get them." I communicated the message of the tree to the boy because I knew that everything was favorable for carrying on the project. The soil is a sandy loam, of good enough quality for spruces and firs, and not too rough for cultivation: there are three good sized towns within easy reach, constituting a logical market. Moreover, the wind-breaks and other trees that adorn the farm are indisputable evidence that mother and dad would be encouraging factors in the venture.

When we write about growing trees on a crop basis, we mean that the same thought and work in preparation, care and marketing be given, as far as needed, as other farm crops, with the hope of financial returns. In the fulfillment of this definition the ground should be ploughed and harrowed. This means that the planting costs will be lessened, weed troubles reduced, and cultivation made easier. The planting should be made in straight rows four feet apart with the plants four feet apart in the rows. This provides plenty of room for cultiva-

tion for three seasons and for the development of the trees. This spacing will allow 2,700 trees to the acre. Where land is limited, it is a good plan to plant the trees so that any three will form an equilateral triangle with sides three feet in length. This allows a radius of eighteen inches for each tree, 5,600 trees to the acre, with chance to cultivate only one way.

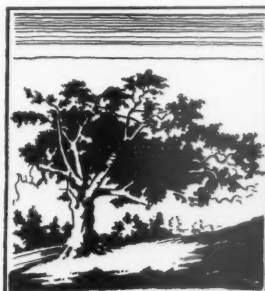
Good strong transplants should be planted, preferably two-three or two-four stock. You know that the first figure refers to the number of years in a seed bed, and the second to the number of years the plant has been allowed to grow in a transplant bed. If seedlings are purchased—and they are cheaper—they should be put in transplant beds in a garden and cultivated and watered for two years. Such a transplant bed should be established to develop sturdy plants for replacement of the ones that die in the field or are harvested. If there is no hurry to start the project, the plants can be grown from seeds, but this

is a rather particular task as I pointed out in a previous article. The locality determines what is meant by Christmas trees. Spruces, firs, pines, cedars, hemlock and even magnolias are used. Spruce and fir make the best Christmas trees, with Norway spruce rating first for cultivation purposes. It is a rapid grower, has a (Continuing on page 45)



FAMOUS TREES EVERY BOY AND GIRL SHOULD KNOW

No. 3---THE CHARTER OAK



THE FIRST SETTLERS AT HARTFORD, CONNECTICUT, FOUND THERE A WHITE OAK, ALREADY FULL OF YEARS. THE INDIANS BEGGED THE PIONEERS TO SPARE THE TREE BECAUSE IT HAD GUIDED THEIR ANCESTORS FOR HUNDREDS OF YEARS.



IN 1687, AT A SESSION OF THE COLONIAL ASSEMBLY AT HARTFORD, SIR EDMUND ANDROS, WHOM KING JAMES HAD APPOINTED GOVERNOR OF NEW ENGLAND, DEMANDED THE RETURN OF THE LIBERAL CHARTER GRANTED THE PEOPLE OF CONNECTICUT BY CHARLES II. THIS STRUCK TERROR TO THE HEARTS OF THE COLONISTS.



IN AN INSTANT, THE LIGHTS OF THE HALL WERE EXTINGUISHED, AND RELIT, BUT THE DOCUMENT HAD DISAPPEARED FROM THE TABLE.



CAPTAIN WADSWORTH HAD CARRIED IT AWAY AND CONCEALED IT IN THE OLD OAK'S HOLLOW TRUNK. WHEN, IN 1856, A HEAVY STORM LAID THE GREAT TREE LOW, THE BELLS OF THE CITY WERE TOLLED AND A BAND PLAYED FUNERAL DIRGES OVER ITS RUINS.

GREAT SMOKIES

(Continued from page 8)

high cross ridges and isolated peaks, a region of innumerable streams finding devious ways to the Pigeon and Tuckasegee Rivers. It encloses on three sides the Qualla Indian Reservation thrusting upward toward the divide. In Robert Lindsay Mason's "The Lure of the Great Smokies," which goes to foundations concerning this remarkable region and its people, justifying its title, we read that the first inhabitants were a "white-haired, pink-eyed race of diminutive Albinos" who were driven out by the invading Creeks, who in turn were driven out by the Cherokees, who named these the Unegas or White Mountains, probably because so long and often softened by a whitish haze. In Colonial days the divide was known as Great Iron Mountain.

The western half of the Park, in every respect lesser, consists almost wholly of cutover lands added under the local impulse to possess as big a National Park as possible. The ranges are low, sometimes little more than a thousand or two feet, the levels broader, the country rolling and beautiful like that of thousands of square miles of other foothill country throughout the Southern Appalachians. All but one tract of it has been lumbered in recent years; the largest single tract was cut immediately before its purchase for the Park.

This is the country of the mountaineer. Scattered among hundreds of surrounding miles of foothills, hidden in ravines usually on the banks of streams, flanked by sharply-tilted corn fields on one or both sides, are log homes often three or four generations old. Later generations have built nearby, often on the same stream if land and water should suffice to supply combined household needs. From these homes men go forth, rifle in hand, for game to supply the family pot, and then to brew a more insidious pot in recesses deeply hidden in the wilderness. Homes of a few willing mountaineers, not many, have been included in the Park.

These people are of upstanding Scotch-Irish, even of English stock, survivals of a century or more of isolation, hardship and poverty. Though often shy of the visitor from more settled neighborhoods, they are dignified, self-respectful, upstanding and often handsome.

Another interesting feature of the foothills are the broad natural open parks called coves. All of these have been farmed for generations. North of the Park in Tuscaleechee Cove on the Little River, stood the mills which reduced the west half of Great Smoky to lumber. South of that, within the Park, is beautiful Cade Cove. A dozen rushing streams meet in what was never in geologic times a lake, contrary to local belief. When I first saw it in 1926, it was prosperous farmland.

The student of nature will find in this western half the fascinating tops of many a picturesque bald mountain, grown heavily with grasses and shrubs.

No satisfying explanation has been discovered for the existence of balds, which are common throughout the Southern Appalachians. There are several excellent examples in the western half of the Park, easy to climb through the second growth mountain sides. Whatever the reason for the existence of these spots, it is certain that their presence adds much to the diversity of the mountains. Thunderhead is a great example.

Including the balds, the primitive ridge-top ribbon running the full length of the Park, and covering the gamut of botanic and zoologic example from lowest to highest main-ridge altitude, offers a study in comparative values unequalled in the continent. To some extent this unbroken primitive summit ribbon justifies the cutover half of the Park.

In 1932, the National Park Service announced in its first

Great Smoky pamphlet a hundred and fifty-two varieties of trees alone. Nowhere in the world, says this pamphlet, is there such a variety of plant life in an equal area. This is essentially a deciduous or hardwood forest, but there is good pine of a number of species on some of the ridges, with a little scattered generally about; and above 4,000 feet occur the largest stands of spruce left in the country, with balsam closely associated. Hemlocks, large and numerous, grow freely with the hardwoods at many levels, and group at altitudes below the spruce and balsam.

A very important element in the forest spectacle is the rhododendron. As a mountain man put it, "he's the boss." It grows with amazing vigor, covering miles of forest floor with higher-than-head thickets, which is impenetrable without an ax. Often in height and thickness of trunk and limb it is practically a tree. This is the *Rhododendron Catawbiense*, bearing huge clusters of rose-purple flowers from June to September. There are also white and wine-colored species, all flowering profusely.

It fills valley bottoms and sometimes covers lusty streams so effectively that their presence would be unsuspected to those looking down from above were it not for the voice of concealed water. It runs up mountain sides in the wake of forest fires, yielding only to the young trees which presently push up from beneath and edge inward from the sides. Often it covers lofty ridges with shining armor, where the mountain people call it "slick" from below and "rough" when they're in it. In June and July the Great Smokies are glorified. Mountain laurel also reaches here its highest development, sometimes a foot in trunk diameter and many feet high.

It is impossible to describe the Great Smoky forest, so rich is it in variety and beauty. Occasionally it is found open and cathedral-like, with lofty ceilings of foliage supported by splendid columns, and furnishings of gracious shrubbery upon flowered velvet carpets. Again, it grows as close as wheat with spindling youngsters, among which rise here and there, often at far intervals, a towering ash, or a thick-limbed spreading maple. I recall a tulip at least twenty feet in girth and mighty in spread of limb and body of foliage, few of whose neighbor trees for a long distance around much exceeded a foot in trunk diameter. S. B. Bulkeley, one of the earliest of Great Smoky's botanists, records "a tulip eleven feet in diameter, a chestnut as big as the tulip, and a white ash nearly seven feet through." Robert Lindsay Mason writes of a tulip which measured thirty-five feet in circumference.

There are forest neighborhoods where oaks or cedars be-little all rivals together in number, or where hemlocks by their frequency make all others seem intruders or where tulips prevail, or maples, or pines. The woods everywhere are checkered with such groupings of prevailing species, but none enforce exclusive rights except the spruce where, in close stands, it shuts out competition.

More frequently, trees and shrubs of very many kinds, and of all ages from saplings to hoary giants, associate in a general society that is bewildering in its rich variety, its coloring and its posturing. Cucumber, mulberry, sweet gum, willow, oak, a little hornbeam, pine, hickory, tulip, hackberry, red cedar, thorn, magnolia, ash, locust, sourwood—to list these freely-mingling companions would be to list the trees of the Appalachians; save that, everywhere, some species prefer their special environment, as the linn, the elm and the gum choose the moister bottoms, the sugar maples the middle altitudes, and the cucumber the milder sloping bases of the mountains. But few of these of selective habits are bound wholly by their preferences, so (Continuing on page 44)

Hoover Orders Federal Reorganization

PLAN PRESENTED CONGRESS WOULD CREATE DIVISION OF LAND UTILIZATION AND CONSERVATION IN DEPARTMENT OF AGRICULTURE

IN a special message to Congress on December 9, President Hoover revealed his closely guarded plan of reorganization of the Executive Branch of the Federal Government. The message was in the nature of executive orders which, under the Act of Congress passed last June, will become effective in sixty days unless disapproved by Congressional action in the meantime.

While the orders affect fifty-eight executive agencies of the Government and appear to call for a sweeping reorganization of Federal machinery, conservation agencies are not basically changed to any great extent. The President's plan calls for the establishment of a Division of Land Utilization in the Department of Agriculture "to include functions whose major purpose relates to the protection and utilization of land and its inherent natural resources." The Division would be in charge of an "Assistant Secretary of Agriculture for Land Utilization" and would include the following organizations and functions:

1. The Forest Service, now in the Department of Agriculture.
2. The General Land Office, which is transferred from the Department of the Interior to the Department of Agriculture and carrying with it the transfer of responsibility for the handling of approximately 180,000,000 acres of unreserved public lands.
3. The administrative duties, powers and functions of the Committee on the Conservation and Administration of the Public Domain, which are transferred to the Department of Agriculture, and the committee shall serve in an advisory capacity to the Secretary of Agriculture.
4. The Advisory Council of the National Arboretum, now in the Department of Agriculture.
5. The Bureau of Biological Survey, now in the Department of Agriculture.
6. The Bureau of Chemistry and Soils, now in the Department of Agriculture.
7. Various fractions of bureaus already in the Department of Agriculture dealing with this major purpose will be subsequently added to this general division.

All of the agencies grouped in the proposed Division of Land Utilization are already in the Department of Agriculture except the General Land Office, which is now in the Department of Interior, and the Committee on the Conservation and Administration of the Public Domain, which has functioned as a commission responsible to the President. Under the President's consolidation plan the National Park Service remains in the Department of Interior, and the Bureau of Fisheries in the Department of Commerce. The National Park Service is allocated to a Division of Education, Health, and Recreation, to be established in the Department of Interior and to include in addition to the National Parks, the Bureau of Indian Affairs, the Public Health Service, the Division of Vital Statistics, National Monuments and Cemeteries now administered by the War Department, the Office of Education, St. Elizabeth's Hospital, the American Printing House for the Blind, the Columbia Institution for the Deaf, and Howard University.

No mention is made anywhere in the President's message of the Bureau of Fisheries which he apparently desires to leave untouched in the Department of Commerce. In the Department of the Interior the President would establish the Division of Public Works, under an Assistant Secretary of

Interior for Public Works. In this division he would group the Bureau of Reclamation, the Geological Survey, the non-military activities of the army engineers, including rivers and harbors and flood control work, the Mississippi River Commission, the Bureau of Public Roads, and other public works agencies.

The President's plan also calls for a Division of Merchant Marine in the Department of Commerce with an Assistant Secretary of Commerce in charge. The Coast and Geodetic Survey, the Hydrographic Office of the Bureau of Navigation, the Survey of Northern and Western Lakes, the Bureau of Navigation, the Inland Waterways Corporation, and several other agencies dealing with marine affairs would be concentrated in this Division. To the Department of Commerce would also go the Weather Bureau, now in the Department of Agriculture. The Federal Oil Conservation Board would be abolished and its powers and duties lodged in the Bureau of Mines.

In respect to the proposed Division of Land Utilization, the President said:

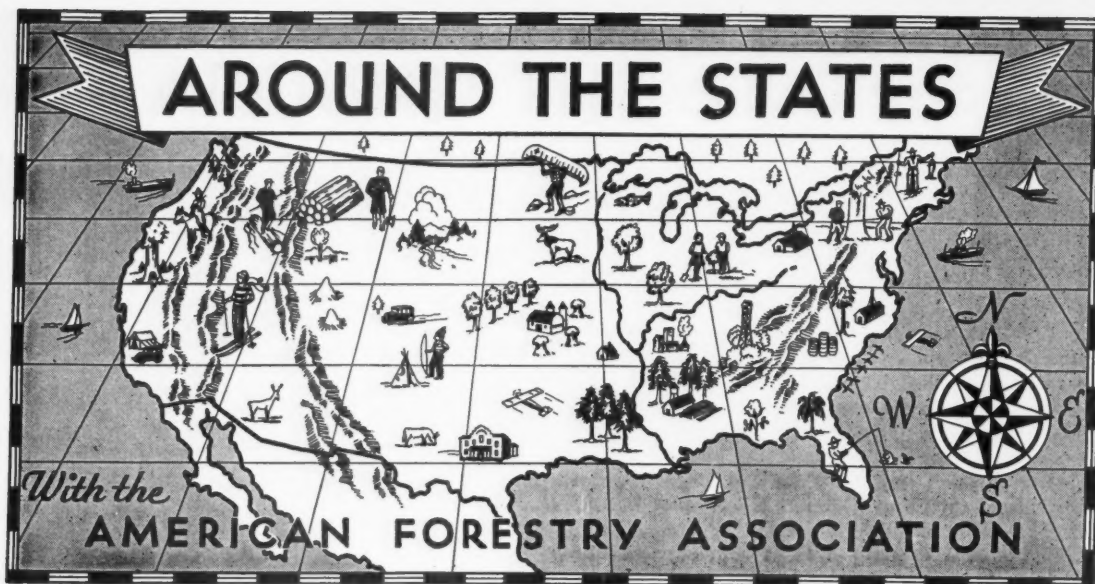
"It is intended by the executive order on the Department of Agriculture to make of that organization a department of agriculture, land utilization and conservation. In addition to activities which are directly and strictly of an agricultural nature, the Department of Agriculture has been charged with tasks which pertain to land utilization and conservation and which historically have been intimately associated with the work of the department and are now closely related to many problems characteristic of agriculture. These activities are performed for the most part by the Forest Service, the Bureau of Biological Survey, the Bureau of Chemistry and Soils and the Advisory Council of the National Arboretum.

"It is proposed that the consolidated activities of the Federal Government which deal with land utilization and conservation problems be placed under the direction of an Assistant Secretary of Agriculture for Land Utilization, who will be responsible to the Secretary of Agriculture for the proper administration of the organizations performing work directly relating to land utilization and conservation. The activities and organizations, in addition to the Forest Service, the Bureau of Biological Survey, the Bureau of Chemistry and Soils and the Advisory Council of the National Arboretum, which it is proposed should be placed under the immediate direction of the Assistant Secretary of Agriculture for Land Utilization are:

"1. The General Land Office of the Department of the Interior.

"2. The administrative duties, powers and functions of the Committee on the Conservation and Administration of the Public Domain."

Preceding his message on reorganization by two days, the President, on December 7, laid before Congress his budget recommendations for the next fiscal year. Net reductions in Federal expenditures of over a half million dollars are proposed by the President. If Congress approves the President's budget, conservation agencies will be called upon to help effect this large saving. Forest Service appropriations are recommended in the amount of \$11,730,611, which would mean a reduction in the funds available for the current year of \$652,683. The bulk of this saving would be accounted for by present and proposed salary cuts and by a decrease of \$435,000 in payments to states and counties entitled under the law of a percent- (Continuing on page 37)



Roosevelt Endorses a Land Use Survey

Franklin D. Roosevelt in a speech before the Georgia Forestry Association at Warm Springs, Georgia, on November 29, declared himself in favor of forest protection and development, and of converting sub-marginal farm lands into forests. Stressing the problem of land use, he said, "It is a question of putting every acre in every state in the Union into use to which it is most fitted. Every agency, federal, state and local, can cooperate in the work."

The President-elect recommended a land survey as essential toward putting lands to their best use. He described the work in New York State, where about one-sixth of the State has been studied and plotted to determine the lands best suited for forestry. Accordingly, the State has already begun buying sub-marginal lands to be converted into growing areas. Of the 18,000,000 acres of farm lands in New York State, he said, there are 4,000,000 acres that should be growing forest trees.

Governor Roosevelt traced his interest in the land problem to the time when as chairman of the conservation committee of the New York State Legislature he became associated with Gifford Pinchot, then Chief of the United States Forest Service. Mr. Pinchot displayed before the committee two pictures taken at different periods of the same valley in northern China. One showed a prosperous valley with tree-clad hills, and the other taken some years later showed the valley denuded of trees after many people were forced to move out.

Bringing attention back to America, the Governor said that any state can afford to secure money through bond issue to take many of the sub-marginal lands out of agricultural production. He showed how the state would save because it would not have to maintain roads and schools in the areas. With the movement of families from the thinly populated marginal lands, it would no longer be necessary to support the isolated one-room school houses, and the children would have better opportunities in the more efficiently managed consolidated schools. Similar savings would result because of reduced expenses in maintaining lines for electricity and for telephones.

Governor Roosevelt estimates that New York State could convert the poor farm lands of the state into productive forest areas at a cost of about \$6,000,000, and that savings ranging from two to three million dollars a year would result. He looks forward to the time when this may be accomplished, and we will have a more stable population with the same kind of advantages in the country as exist in the city.



Betty Jane Meggers and Norman Wertleb with their Prize Forestry Notebooks.

Association Medals Awarded in National Capital Forestry Notebook Contest

Betty Jane Meggers, ten-year-old pupil of the Ben W. Murch School, and Norman Wertleb, sixth grade pupil in the Madison School, were, on November 19, awarded The American For-

estry Association medals in the third annual contest of forestry notebooks sponsored by the public schools of the District of Columbia.

The winning notebooks were selected from several thousand submitted by boys and girls of the fifth and sixth grades in Washington and the neighboring suburbs of Maryland and Virginia. The notebooks were placed on exhibit in the new National Museum for two weeks.

First prize for the best classroom notebook was awarded to the Bruce School, Miss E. L. Hinton, teacher. The medal for the most outstanding exhibit of individual pupils' notebooks was awarded the Petworth School, where, out of 164 children enrolled, 112 notebooks of merit were submitted.

The American Forestry Association medals were awarded the winners by Mrs. Frank W. Ballou, wife of the Superintendent of Schools for the National Capital.

Contest judges were Miss Florence Ward, of the Extension Service, Department of Agriculture; Colin H. Livingstone, President of the Boy Scouts of America; and Dr. W. B. Bell, of the United States Biological Survey.

The notebooks were prepared during the past summer and fall under the direction of Miss Esther Scott and P. J. Rayford of the elementary science departments, and the nature-study teachers of the public schools.

Tennessee Great Smoky Mountains Park Commission Reorganized

George Dempster, City Manager of Knoxville, Tennessee, has been appointed chairman of the Tennessee Great Smoky Mountains Park Commission by Governor Henry Horton, to succeed James A. Trent, Mayor of Knoxville, who has served as temporary chairman for the past several months. The other members of the

commission are Clyde Bogart, R. M. Atkinson, W. W. Craig, J. M. Clark, and D. C. Chapman, of whom the last two were disappointed from the former state commission.

Reorganization on a permanent basis was made necessary, according to statements by Arno B. Cammerer, associate director of the National Park Service, to assure continuance of the financial interest of the Rockefeller

Foundation, and the early completion of land purchases for the Park. It will also help assure the expenditure of \$509,000 of emergency relief funds recently allotted by the Government for work in the Park. This includes \$400,000 for a road on lands now within park ownership, along the crest of the Smokies from Newfound Gap to Clingman's Gap. Work is expected to begin next spring. The Park Service has already let a contract for a portion of the road on the North Carolina side, with the provision that the work will be done largely by local labor and with a minimum of labor-saving devices.

The Great Smoky Mountain National Park area embraces 427,000 acres on both sides of the Blue Ridge Mountains separating the States of North Carolina and Tennessee. The land is being purchased preparatory to being turned over to the Federal Government by State Commissions appointed by the Governors of each of the States. To date 297,719.7 acres have been deeded to the Government and is being protected pending the completion of the area. Headquarters of the Park Superintendent are at Gatlinburg, Tennessee.

Airplanes Prohibited in National Forest Primitive Areas

Many protests have been made to the United States Forest Service about the use of airplanes in transporting hunting and fishing parties to remote portions of some of the National Forests.

These protests have been aimed principally against the use or landing of airplanes within Primitive Areas because they impair the qualities of isolation, remoteness, and unmodified nature which such areas were designed to conserve. Persons using airplanes in Primitive Areas would have advantage in the occupancy and enjoyment of such areas which are not available to other classes of visitors. It is argued that the use of airplanes would result in the occupancy of areas of high fire hazard, which are difficult of access to ordinary means of transportation. This would increase the fire danger and the cost of protecting such public resources. To meet the situation brought about by the airplane, the Forest Service has just formulated a policy regarding their use within National Forests.

Within parts of the National Forests which are now or ultimately will be opened to automotive transportation through road construction or for which airplane transportation is preferable to expensive road construction, there will be no differentiation between airplanes and other forms of transportation. In such areas public facilities, where available, will be open to airplanes, or special use permits may be issued for landing fields.

Within Primitive Areas when the proper preservation of public values shows the need for the restriction or prohibition of automotive transportation, the use of airplanes will be restricted. In such areas no permits will be issued for the construction of landing fields.

Chapin Jones Case Remains Undecided

The hearings before Governor Pollard of Virginia to consider the case of State Forester Chapin Jones, whose resignation Chairman William E. Carson requested by December 31, charging "a lack of executive energy and ability," were closed on November 22, and as this goes to press the Governor has made no decision.

Counsel for Mr. Jones, Murray M. McGuire, of Richmond, described the case as "probably the most remarkable situation which has ever arisen in the administration of government in the Commonwealth of Vir-

ginia." After eighteen years of service, Mr. McGuire pointed out, the State Forester is required to bring testimony to show that he has the ability to do the things that he has done. In support of Chapin Jones' ability the counsel submitted to the Governor fully one hundred and thirty letters of commendation from The American Forestry Association, the Society of American Foresters, the Association of State Foresters, Chief Forester R. Y. Stuart, Governor Pinchot, of Pennsylvania; State Forester Besley, of Maryland, numerous citizens and forest land owners in Virginia and from twenty other states.

Beginning on November 17, the hearings continued through five days. They had been granted at the request of Mr. Jones and his counsel, because, under the law the State Forester may be removed by the Chairman of the Commission on Conservation and Development only with the approval of the Governor. Besides the Governor, Chapin Jones and his counsel, only State Geologist Wilbur A. Nelson, from the University of Virginia, and four representatives of the press were present. No one attended from the Conservation Commission and no additional statement or definite charge of inefficiency was submitted by the Commission. Letters of commendation rather than the personal testimony of witnesses were presented at the suggestion of the Governor.

In response to direct questions from Governor Pollard asking if the Commission had impaired the efficiency of the forest protection program by interfering in the appointment of men, Mr. Jones reported that two wardens in Wise County had been removed over his objection, but that the ability of their successors has not yet been proved because no serious fire season has intervened. On another occasion a county fire warden had been retained only after the insistence of the Commission.

Concluding the case, Counsel McGuire expressed the opinion that the action of the Commission and of Chairman Carson arose out of misinformation. Had they known what was shown during the testimony before the Governor, Mr. McGuire said they could never have considered the dismissal of Mr. Jones.

Fewer Hunters Licensed in 1931

A half-million fewer hunting licenses were issued in the United States, including Alaska, last year than in the previous year, which set a record. Some states, however, issued more licenses, reports the Bureau of Biological Survey, Department of Agriculture. Authorities on conditions in the various localities, the bureau suggests, may perhaps explain the variations from previous years as due to the depression, to the drought of 1930, to changes in license fees, or to other causes.

Statistics furnished by the states for the calendar year 1931 show the number of hunting licenses as 6,342,626, a drop of 561,308 from the 1930 total of 6,903,934, and a slight decrease from the 6,428,761 reported for 1929. For twenty-three states, as indicated in the bureau's tabulation, the reports include combined hunting and fishing licenses, but separately issued fishing licenses are not included in the summary.

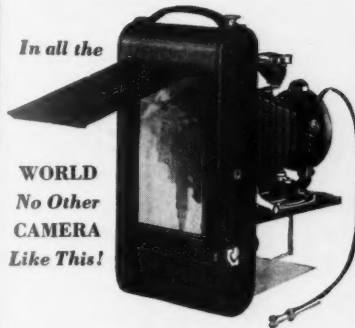
Hunting-license revenues received by the states also declined last year, dropping from \$10,017,564.43 to \$9,867,352.63. Owing to increases in the fees in some states, however, the revenue was nearly \$500,000 greater than the receipts of \$9,391,412.33 for 1929.

As in previous years, New York with 580,933 resident and non-resident licenses yielding \$1,108,604 and Pennsylvania with 536,401 yielding \$1,095,025 are at the head of the list. Of the sixteen states licensing more than 1,000 non-resident and alien hunters, Pennsylvania was first with 6,009. New York and Maine followed with 4,395 and 4,050, respectively.

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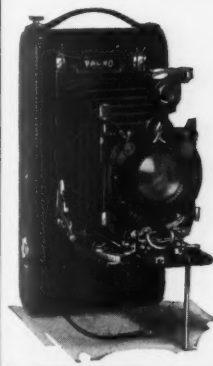
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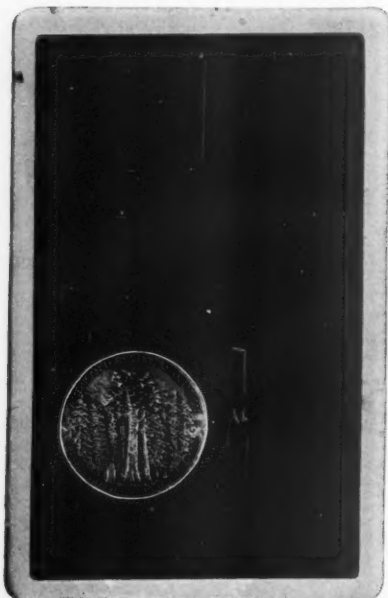


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STUART URGES GREATER FOREST ACQUISITION IN ANNUAL REPORT

An early resumption of appropriations for the acquisition of forest lands under the Weeks and Clarke-McNary laws was urged by Chief Forester R. Y. Stuart in the annual report of the Forest Service. Mr. Stuart's recommendation was based on his belief that an adequate national program of forestry should include provision for more extensive purchases of lands under the provisions of these laws than have hitherto been contemplated, and for their permanent federal administration as National Forests.

The maximum federal program formulated to date contemplates for all the eastern half of the United States an ultimate National Forest area of approximately 16,000,000 acres, or a little more than four per cent of the total forest area, said Mr. Stuart. It is a matter for public concern, he maintained, that progress in carrying out even this program has been halted because of the depression. Within the thirty-seven National Forest purchase units already established, it was pointed out, more than 6,000,000 acres continue in private ownership notwithstanding their integral relationship to the lands already acquired. Their cost, estimated at \$31,000,000, would under prevailing circumstances be substantially less, he believed, adding that their early purchase would liquidate capital now unproductively invested in them and would aid local financial recovery.

Public aid is needed to stabilize the forest situation, the Chief Forester said. Highly unbalanced conditions, it was pointed out, have resulted from public policies consisting too largely of inaction and reliance upon *laissez faire* to find and apply the necessary correctives.

"In comparison with the need, far too little is being done to facilitate and encourage private forest management; public policies of forest acquisition and administration are still exceedingly inadequate; and public restraint of injurious private practices through regulatory requirements has barely begun. While policies and measures designed to promote conservation have had some effect on the balance, they have been insufficient to offset the powerful and relentless pressure of economic forces

created by the pursuit of private profit. These offsetting public policies are being enlarged, but not adequately, and a demand is now developing for diminished public activities, in the name of economy and on the ground of over-expansion of governmental function. The lumber industry, itself, in the grip of economic forces which it appraises as beyond its own power to control, is seeking public aid. It desires this for the purpose of obtaining a better balance between its output and markets and lightening the burden imposed by over-investment and over-expansion. The lumber industry realizes that if public aid having any prospect of adequacy for its effective relief is to be forthcoming, this aid must comprise measures designed not solely for the stabilization of the industry, but designed also to stabilize the basic situation and the forces which are leading on to still greater unbalance in the adjustment of forest use to the forest resource."

The basic problem, according to the Chief Forester, is one of maintaining the power of the country's forests to grow continuously the kinds and quantities of wood that our economic life will require.

"The condition of unbalanced forest areas and volumes both nationally and regionally; the overcutting of second growth; the understocking of large areas of young growth and the complete denudation of 60,000,000 acres of land because of fire and bad logging practice; the replacement of valuable species with those of no or little present usability; all these things and more find their result in marked impairment of the economic and social values which depend upon our forest resources," Major Stuart said. "This dependence relates not only to the commodity value of forests, but also to their service in the fields of watershed protection, recreation, fish and game conservation, and scenic values."

Revised estimates, pending the completion of the nation-wide forest survey now in progress, place the area of forest land in the United States suitable for the production of commercially valuable timber crops at 496,000,000 acres. Only three-eighths of this area, however, now bears sawtimber.

ANNUAL REPORT OF NATIONAL PARK SERVICE

National Park and Monument areas were increased during the past year by 472,736 acres to a total of 12,592,316.21 acres, according to the annual report of the National Park Service. Appropriations for the current fiscal year are \$7,650,620, compared with \$13,069,817.47 for 1932, with revenues for that year amounting to \$820,654.19. During the 1932 season 3,754,596 persons visited the National Parks and Monuments, which marks an increase of nearly six per cent over the previous year.

Of special interest is the presentation of a statement of policy prepared at the request of the Secretary of the Interior by Louis C. Cramton, former member of Congress and Chairman of the Interior Department Subcommittee of the House Appropriations Committee. In seventeen numbered paragraphs the statement declares that a National Park should depend upon its own outstanding scenic, scientific or historical quality and the resultant national interest in its preservation.

The National Park system should possess variety, accepting the supreme in each of the various types and subjects of scenic, scientific and historical importance because of its outstanding merit in its class.

To preserve National Parks unspoiled for the future while providing for the enjoyment and use of the present generation, exotic animal and plant life should not be introduced and timber should only be cut when necessary to control attacks of insects or disease or to conserve the scenery or natural or historic objects. The forests are to be administered for scenic rather than commercial values, and preserved rather than marketed. Likewise, in wild life conservation, the preservation of the primitive rather than the development of any artificial ideal should be sought.

Declaring that recreation in its broadest sense includes much of education and inspiration, the statement upholds the principle that education is a major phase of the enjoyment and benefit to be derived from the parks.

Because the National Parks are essentially non-commercial, only such utilitarian activities should exist as are essential to the comfort of the park visitors, whose benefit and enjoyment should be of first importance. Similarly, private ownership or lease of land within a National Park constitutes an undesirable encroachment, and is declared contrary to the fundamental purposes of the parks.

HOOVER ORDERS FEDERAL REORGANIZATION

(Continued from page 33)

age of National Forest receipts. The latter item is explained by the fact that National Forest receipts have fallen off radically due to a decline in timber sales and the temporary lowering of grazing fees.

The President's budget would reduce by approximately \$131,000 the funds now available for the protection and administration of National Forests. Research and Forest Management would suffer a cut of \$9,280, Range Investigations \$3,000, and Cooperative Distribution of Planting Stock approximately \$5,000. Forest planting on the National Forests, however, is recommended for an increase of \$125,800 making the total item for this activity \$280,000. Although still below the \$400,000 authorized by the Knutson-Vandenberg Act, the increase will permit the planting of hundreds of thousands of small trees now in the National Forest nurseries.

The budget carries no appropriation for forest road development due to the fact that the authorization for that work has expired. The current appropriation of \$3,000,000 is, therefore, lost unless Congress passes the necessary authorization and fixes the appropriation. Forest highway construction, however, under the Bureau of Public Roads, is recommended for an increase of \$645,000.

The Biological Survey is recommended to receive \$1,513,137 or \$243,040 less than the current year's appropriation, nearly half of which or \$118,000 is taken from the administration of the Migratory Bird Conservation Act. Funds for purchasing lands for the Upper Mississippi Wild Life Refuge will be reduced by \$14,478 and for the Bear River Migratory Bird Refuge in Utah by \$9,000. Protection of migratory birds is reduced by \$4,240, and the fund for enforcing Alaska Game Laws by \$3,566, while research in the food habits of birds and animals stands to lose \$4,810 and other biological investigations \$2,500.

The National Park Service would be cut from \$10,640,620 to \$5,123,840, or more than half its appropriation. Most of this reduction is in funds for constructing roads and trails, and unless replaced by special emergency appropriations will result in temporarily stopping practically all work after July first on the Colonial Parkway in Virginia, from Yorktown to Williamsburg and thence to Jamestown, also the Gap to Gap road along the crest of the Smoky Mountains in Tennessee and North Carolina, the Sequoia-General Grant Highway in California and the Desert View Road in the Grand Canyon National Park in Arizona.

The administration of Indian forests would be reduced from \$965,000 to \$611,430. Heaviest in this reduction is a cut of \$250,000 for building roads, and \$78,000 for administering the forests.

Appropriations for the Bureau of Fisheries for 1934, total \$1,831,075 as compared with \$1,976,020 in 1933, exclusive of non-recurring items. These reductions totaling \$144,945 fall most heavily upon the division of scientific inquiry in the propagation of food fishes and in the enforcement of fishery regulations in Alaska. The principal reductions are: propagation of food fishes, \$84,975, Alaska general service \$40,910, inquiry respecting food fishes \$21,580, fishing industries \$16,050. The heavy reduction in appropriations for the propagation of food fishes will further curtail the stocking of public waters.

Hearings before the House sub-committee on agriculture appropriations were completed on December 6 when G. H. Collingwood, For-ester for The American Forestry Association called attention to the current appropriation of \$1,611,580 for cooperative forest protection

under the Clarke-McNary Act of 1924, which is \$163,420 less than was appropriated last year. He urged that everything possible be done to maintain the standards of forest fire protection.

Attention was directed to the white pine blister rust emergency in the Inland Empire. As an interstate problem involving government as well as privately owned timber, the committee was urged to continue the present appropriation for destroying currants and gooseberries on National Forest lands, and as much as possible for the cooperative and investigational activities of the Bureau of Plant Industry.

Directing the committee's attention to the need of continued research concerning the control of erosion, and the importance of carrying the nation-wide timber survey into the turpentine area of the South a delegation including E. George Butler of Savannah, Georgia, R. E. Benedict, Mathew Rue, and George Hewitt Myers, was introduced by Representatives Homer C. Parker of Georgia, with R. A. Green and Tom Yon of Florida. Chairman Buchanan spoke favorably of a nationwide land use survey that would include the timber survey as one of its important parts.

Efforts are underway to have the Rules Committee of the House give a favorable place on the Calendar to Representative Colton's bill, H. R. 11816, for the administration and protection of the Public Domain, and also for Senator Fletcher's bill, S. 475 authorizing the creation of the Everglades National Park. The Fletcher bill passed the Senate last January 19, and takes the place on the House calendar of Mrs. Owen's bill, H. R. 5063.



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FOREST EDUCATION

By HENRY S. GRAVES

Dean of the Yale School of Forestry

And CEDRIC H. GUISE

Assistant Professor of Forest Management at Cornell University

THE primary purpose of this book is to aid in strengthening the system of forest education in the United States. To this end the authors point out the elements of strength and weakness in the forest schools and suggest measures that would lead to raising the general standard of professional preparation in forestry. The book should prove of service to those connected with forest schools, to teachers in colleges and universities which conduct non-professional courses and research in the field of forestry, to students and prospective students of forestry, to employers of foresters, forest owners, men engaged in forest industries, and to laymen interested in the many phases of conservation relating to forestry.

The study was initiated in 1926 as part of a program undertaken by the National Academy of Sciences to investigate the methods of research in forestry. It was carried forward under the auspices of the Society of American Foresters through a grant made by the Carnegie Corporation.

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Book Reviews



FOREST EDUCATION, by Henry S. Graves and Cedric H. Guise. Published by Yale University Press, New Haven, Connecticut. 421 pages. Price \$2.50.

Without attempting to classify the twenty-six professional forest schools in this country, Dean Graves and Professor Guise set forth the principles under which any one familiar with them may rate and classify them for himself. Although the authors admit that there is a sharp distinction between college instruction in forestry and the effort to provide special preparation for professional work, they call attention to a widespread conviction which "prevails among foresters that there are now more forest schools than is necessary or than can be justified by the needs of the profession." The problem, as the authors point out, inevitably arises in every forest school when it is obliged to answer the question as to whether it is fulfilling a definite and essential need in forest education. It must also be met by colleges and universities whose administrative officers think they see a responsibility for including forestry in their curriculum.

Although the profession of forestry is not sufficiently stabilized to permit a forecast as to the probable demand for foresters in the future, the authors of "Forest Education," whose study was made under the auspices of the Society of American Foresters and supported by a grant from the Carnegie Corporation, "urge that a professional course be introduced only where there is a real justification for adding a forest school to the present large number and where financial support can be afforded, commensurate with training of a high degree of excellence."

On the other hand, they express the hope that the number of institutions providing instruction and research in some branches of forestry without professional goals may be increased. They refer especially to the need of such work in the land grant colleges for students of agriculture, land economics and estate management.

Within the pages of this book may be found a statement of the fields of employment open to foresters, with summaries of salaries available in the various fields of activity. The fact that about 80% of the graduates of forest schools find employment in forestry activities is an indication of the opportunities in the profession.

Commenting upon the relative opportunities for forest school graduates in the industries as compared with government or state work, the authors conclude that "the extent of his earnings depends entirely upon his own ability. To the man of no special qualifications, one form of employment offers about the same opportunities as another."

After discussing the several schools from various points of view, attention is directed to forest education in Europe and in other foreign countries. Here are brought out some of the backgrounds which influenced earlier forest education in this country, and to which can be traced certain of our present efforts.

Nowhere in American publications is there as complete and authoritative a description of the work and opportunities of the forestry profession and the necessary preparation which

one should have in assuming its responsibilities. Admitting that it deserves the attention of every forester, this is a book which should be on the shelves of every college and high school library. It will answer as no other publication can the myriad questions of the boy who would undertake to study forestry, of the parent who would open the doors of opportunity for his son, and of the teacher who so often is called upon to advise on questions of vocational guidance.—G. H. C.

PLANTS—WHAT THEY ARE AND WHAT THEY DO, by A. C. Seward. Published by The Macmillan Company. 138 pages. Price \$1.50.

This will prove a particularly pleasing little book for one desiring an intimate knowledge of plant life without delving through volumes of botany. It is concise, clear, and contains few technical terms, making it easily read by the layman.

The author says he wishes to "offer a small contribution which may possibly be found helpful to teachers who realize the importance of responding to the urgent demand for creating an intelligent interest in natural phenomena and an appreciation of the meaning of scientific research." He has done far more than this, for the book, aside from answering the qualifications of a good text book, is intensely interesting.—J. N.

GAME FARMING, by Horace Mitchell. Published by the Hale Publishing Company, Portsmouth, New Hampshire. 162 pages—Illustrated. Price \$2.50.

A textbook for the more efficient and economical propagation of pheasants, quail, wild ducks and ornamental birds of endless value to those who would seek pleasure or profit in game farming. The author deals intimately with the breeding, hatching and rearing of birds. He presents interesting lights on winter care and feeding, going exhaustively into vermin control. One of the most interesting chapters, for the layman, is a review of the "industry," for the average person is not aware of the tremendous growth of this profitable occupation since the first importations of pheasants to the United States. Splendid information, presented convincingly and clearly.—E. K.

AMERICAN CIVIC MANUAL, edited by Harlean James. Published by the American Civic Association, Washington, D. C. 276 pages—Illustrated. Price \$3.00.

A record of recent civic advance with a list of who's who in civic achievement among the members of the American Civic Association. Going through the George Washington Bicentennial and its civic influences, the manual delves into National Parks, wilderness regions, park budgets, park visitors, park progress, and the significance of International Peace Projects. Problems of Public Domain, wild life refuges, scenic assets and landscape study come under the chapter on land planning. The Federal City is given a chapter. Under other headings come regional planning, state planning and roadside improvement. A worthy book.—E. K.

AMONG THE CURRENT PUBLICATIONS

The Durability of Fence Posts, by J. C. Wooley. Bulletin 312, Agricultural Experiment Station, University of Missouri, Columbia, Missouri. Presentation of fence post data gathered at the University of Missouri since 1913.

Ornithology of the Oneida Lake Region, by Dayton Stoner. Bulletin of the Roosevelt Wild Life Experiment Station of the New York State College of Forestry at Syracuse. A report of the late spring and summer birds of the Oneida Lake Region comprising 755 pages.

Management of Upland Game Birds in Iowa, published by the Iowa State and Game Commission, Des Moines, Iowa. Quail, pheasant, Hungarian partridge, prairie chickens and ruffed grouse are discussed from the point of view of the farmer as well as the sportsman.

Timber Conservation and The Lumber Industry, by A. Stuart Campbell, Ernest M. McCracken and Robert C. Unkrich of the Bureau of Economic Research of the University of Florida, Gainesville, Florida. Two comprehensive studies which consider each problem nationally but apply the conclusions to Florida.

Park Recreation Areas in the United States, 1930, Bulletin No. 565, of the Bureau of Labor Statistics, United States Department of Labor. For sale by the Superintendent of Documents, Washington, D. C. The statistics and text deal primarily with municipal and state parks. No attempt is made to cover the national parks.

New Jersey State Parks, 1932. An illustrated booklet of 55 pages with large maps describing the remarkable system of state parks which New Jersey is developing. Department of Conservation and Development, State House Annex, Trenton, New Jersey.

Migratory-bird Treaty-act Regulations and Text of Federal Laws Relating to Game and Birds. Issued by the Biological Survey of the United States Department of Agriculture; for sale by the Superintendent of Documents, Washington, D. C. Price 5c.

Birds, Bulletin No. 27 of the New Zealand Native Bird Protection Society, Inc., Box 631, Wellington, New Zealand. Contains drawings and descriptions of several traps for vermin.

More Beautiful America Contest, by the Meredith Publishing Company, Des Moines, Iowa. An attractive bulletin outlining contest plans for beautiful community homes and gardens.

The Forestry Primer, 1933 Edition, published by Charles Lathrop Pack, President of the American Tree Association, Washington, D. C. This new edition, which brings the number of copies printed to four million, has been revised and brought up to date in accordance with the last census.

The Wild Pigeon Acknowledgment

Acknowledgment is made of the use of the beautiful painting of the wild pigeon in the November, 1932, issue to Mr. William B. Mershon, the owner of the painting. Also, the reproduction of the old etching of a pigeon net, printed at the same time, was copied from Mr. Mershon's book, "The Passenger Pigeon."

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Ask the Forester?

Forestry Questions Submitted to The American Forestry Association, 1727 K St., N. W., Washington, D. C., Will be Answered in this Column. A Self-Addressed Stamped Envelope Accompanying Your Letter will Assure a Reply.

QUESTION: What is the pest that is destroying the hemlock trees in Peninsula Township, Grand Traverse County, Michigan? They are as destructive as fires.—P. E. H., Illinois.

ANSWER: The pest is an insect known as the hemlock span worm or "looper." Outbreaks have occurred throughout the entire range of eastern and western hemlock and also in balsam, spruce and pine. The mature moth lays eggs upon the needles and twigs of hemlock trees in September. The eggs hatch during the following spring and early summer and the larvae or worms feed ravenously for about six weeks. They quickly defoliate large areas of evergreen forest. During mid-summer they go through the chrysalis or cocoon stage and the moths appear again in September.

Forest areas have been protected by dusting from airplanes with fifteen pounds of calcium arsenate to the acre. Individual trees may be sprayed in early July with arsenate of lead. Only where the value of the trees or timber stand is sufficient to warrant the expense can protection be carried out.

QUESTION: On our farm in Vermont is a good spring and reservoir, and above the reservoir a ten-acre field which has been mowed for many years. If we reforested this field would it increase or diminish the water in our springs?—F. M. J., New York.

ANSWER: Whether reforesting a ten-acre field will affect the springs in its vicinity is a question. Certainly, it will not diminish the water supply. Experience shows that while trees use large amounts of water they protect the soil and keep it in condition to encourage the water from rain or snow to percolate down into the under surface reservoirs and thus feed the springs. This would be more apparent on a large area than on a ten-acre field, but every ten acres of forest land helps in the conditions of the surrounding country.

QUESTION: Is there a certain time of the year for trimming off dead, dry branches of spruce trees? Is it beneficial to the tree?—O. N., Vermont.

ANSWER: Pruning or trimming dead branches from spruce trees is desirable and can be done at any convenient time. The branches should be trimmed close to the parent stem either with a saw, or a pair of clippers. On crisp, cold days when everything is frozen, they can often be knocked off clean with the head of an ax. Trimming off the dead branches helps produce clear lumber, but does not effect the rate of growth of the trees.

QUESTION: I have a large number of cedar bird houses in which some bug or worm is eating, and making a mealy powder which drops all the time. Do you know what causes this? How can I prevent it from coming into the others?—C. J. A., Massachusetts.

ANSWER: The bird houses are infested with a powder post beetle which gained entrance after the logs had been cut. More thorough drying would probably have prevented their entrance or killed them before the wood was manufactured into tree houses. If you can arrange with a local lumber yard to have them all placed in a dry kiln for twenty to thirty-six hours at a dry temperature of 180 degrees or higher, or a steam temperature of 130 degrees, it should kill the borers and destroy their eggs. There is small likelihood that they will again enter the bird houses after such a thorough treatment.

QUESTION: Will you tell me the best soil for black locust? Is it all right to plant locust in the fall?—L. C. E., Pennsylvania.

ANSWER: Black locust is not demanding and will grow on almost any soil. It prefers soils which are well drained and moderately fertile, and should grow well along a creek. Fall planting is usually successful. If the seeds are planted in the spring they should be soaked over night in warm water.

QUESTION: Is there a law in any state that absolutely requires the use of a specific log rule in the sale of standing timber or logs?—A. P. R., South Carolina.

ANSWER: Dr. E. A. Ziegler of the Mont Alto Forest of Pennsylvania State College calls attention to Kinney in "Essentials of Timber Law," published by John Wiley & Sons, pp. 199-201, where he says "some states make measurement by any other rule than the standard illegal." He notes that this is true in Arkansas, where the Doyle rule is legal, in Mississippi if the substitute rule gives less contents than the Doyle and in Washington, which requires the Drew rule. Other states make different rules the state "standard" or "Statute" rule, but do not forbid buyer and seller agreeing on a different rule by contract. These state standard rules are binding when no contract specifies the rule to be used. In states without a legal, or statute rule, local custom governs timber measurement in the absence of a statute rule.

According to "Forest Measurement," by H. C. Belyea, published by John Wiley & Sons, Scribner's Log Rule is the statute rule by legislative enactment in Minnesota, Wisconsin, West Virginia, Oregon, Idaho and Nevada. It is also the official log rule of the Forestry Branch of the Canadian Department of the Interior.

The Scribner Decimal C Log Rule is the official log rule of the United States Forest Service on all of its timber sales. The Spaulding Log Rule is official in California. The Maine Log Rule, sometimes known as the Holland or the Bangor Rule, is restricted to northern New England and the State of Maine. The Blodgett Log Rule is official in New Hampshire. The Scribner Doyle Log Rule has been official in Louisiana since 1914.

Forest Products Laboratory to Study Southern Hardwoods

The increasing importance of the southern hardwood forests as a source of hardwood lumber makes it desirable that a greater knowledge of the properties and characteristics of the material be made available to the general public. For this reason the United States Forest Products Laboratory, at Madison, Wisconsin, has undertaken an extensive research program which is expected to yield much useful information concerning southern hardwoods.

According to Carlile P. Winslow, director of the laboratory, the wood-using industries realize that some of the southern hardwoods dif-

Distribution of Walnuts From Historic Grounds Begun

In spite of the fact that collection of nut seeds on historic grounds runs into the early winter, it has been possible this year to respond to many of the requests in time for fall planting. A portion of the seeds from Gettysburg Battlefield was brought to Washington by truck immediately after the ceremony by which they were presented to the National Nut Tree Planting Council and were put through the hulling machine at Arlington Farm without further delay. Those which were gathered at Mount Vernon, Arlington, the Lincoln Memorial grounds, Bull Run, and from

THE 1932 INDEX

A valued comment from a middle western member with regard to the annual index of the magazine, and our recent innovation embodying a special listing of the "Around the States" items for ready reference, reads:

"*AMERICAN FORESTS* is the best and only running history of the conservation movement in the country and it is gratifying to find items of historical interest efficiently indexed."

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fer from those species they have been familiar with. With respect to seasoning, manufacture, and use, there is too little definite information concerning southern hardwoods from the standpoint of the user and the producer. More information is urgently needed in order that the Laboratory may intelligently answer questions asked by wood-using industries which are more and more turning to southern hardwood supplies.

The public need of investigations along these lines already has been called to the attention of the Laboratory by the Hardwood Manufacturers' Institute, the Memphis Lumbermen's Club, by sawmills, and by wood working and consuming factories.

The general plan of the investigation will involve studies which follow the material from the forest to its ultimate suitability for particular uses.

Work is now under way at two southern mills to determine the size and grade of logs that pay their own way in typical logging and milling of southern hardwoods. The study is expected to yield information that will promote selective logging of southern hardwoods to such an extent that extensive hardwood areas may be continuously maintained in forest production.

Laboratory representatives already have collected material in the field for a determination of the variation of the properties of the wood of southern oaks and other hardwoods as affected by different conditions of growth. The material obtained represents conditions ranging from flooded back water areas to nearby bluffs and ridges. The true botanical classification of each species sampled was determined in the forest at the time the individual trees were cut.

Investigations that will lead to better seasoning methods for southern hardwoods, especially southern oak, will be renewed and the results obtained will be correlated with the local conditions of growth if such a relation is evident.

Among the more important but more difficult studies to be undertaken is one in regard to the working and machining characteristics of the different southern species.

trees growing in the District of Columbia had already been hulled and dried and were fit for shipping.

Distribution will be continued in the states which have mild winters, but the greater part of the seeds will be stratified and held for spring distribution. Although fall planting has been recommended for the planting of nut seeds when proper protection against squirrels and rodents is provided, the delays caused by shipping the seeds to Washington and preparing and inspecting them for distribution have heretofore made spring planting necessary.

The advance reports on the fall collections promise a large supply of nut seeds which are available for planting.

Secretary Wilbur Again Endorses Colton Bill in Annual Report

The transfer of non-mineral public lands to the states, or assuming that they may not accept the responsibility, federal regulation to prevent the deterioration of the lands, is recommended by Ray Lyman Wilbur, Secretary of the Interior, in his annual report to the President.

Not until this year, reports the Secretary, has an adequate bill progressed as far as a favorable report by a congressional committee. He referred to Representative Colton's bill, H. R. 11816, now on the House Calendar awaiting action.

The remaining public lands, continued Secretary Wilbur, are chiefly valuable as grazing areas, and their protection is essential to the welfare of the state in which they are located, as well as to the preservation of this national asset. In the past the state has had no authority to regulate grazing upon them, and Congress has conferred no such power on any government department, he said, pointing out that either the states or the Federal Government must do the job.

Secretary Wilbur praised the National Park Service, which he said, in reviewing the last four years of his administration, "has been administered on a completely nonpolitical basis, and should be kept so."

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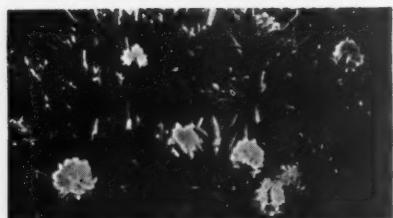
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ROOSEVELT RECEIVES AGRICULTURE-FORESTRY PROGRAM FOR SOUTH

Through a letter addressed to Governor Roosevelt late in October, a committee of Southern citizens sought the approval of the President-elect to an integrated program of agriculture and forestry for the states of Alabama, Florida, Georgia, Kentucky, North Carolina, South Carolina, and Tennessee. The letter addressed to Governor Roosevelt is quoted in full below:

"Your announced policy toward agriculture and forestry is noted with gratification. We believe it to be both wise and timely. Particularly is this true in the Southern States where the proper and adequate development of agriculture and forestry are basic and vital—not only to the economic future but to the maintenance of a satisfying civilization.

"Following the thought that it would be acceptable to you, a few who are conversant with agricultural and forestry practice in the South and with present emergent needs due to widespread losses and long-continued unemployment, have met in the endeavor to formulate and submit to you a constructive program which we trust will meet with your approval.

"Should the trend of events permit of developing a national policy stressing the points herein referred to, we believe it will result, in so far as the Southern States are concerned, in the fulfillment of the ideals to which you have given expression.

"It seems desirable that all Departments of Government formed for the purpose of functioning directly and indirectly in the interests of agriculture give full and prompt cooperation in initiating a marked revolution in the present agricultural practice of the South.

"To this end, we respectfully urge the setup, through Congressional action, of such additional departmental functions as will be necessary in the establishment of a new program, and in making it quickly effective.

"We believe that certain of the following recommendations are essential, and all of them important to success within a reasonable time.

Agriculture:

"1. The development of a program which will result in the replacement of a large percentage of farm tenancy with farm ownership. Such a policy should supply the necessary facilities for credit—so simplified as to be made easily available to the family desiring small acreage.

"2. The establishment of a defined policy by the Department of Agriculture for the focusing of its instruction and guidance, with a view to bringing about the partial replacement of so-called "one-crop, cash-crop" system of cotton and tobacco with small grain and legumes; thus making an enduring and profitable basis for animal husbandry—which is the recognized essential of any permanently successful agricultural system.

"3. The rebuilding of a satisfying rural civilization in the report and as given in the general findings of the published report of the Rural Life Commission appointed by former President Theodore Roosevelt.

"4. By taking over by the Government, in co-operation with the States—or with their approval, of great areas of so-called marginal land, to be used primarily for reforestation on a liquidating basis.

"5. The immediate credit required for the initiation of this program would necessarily be provided by the Government; but under scientific management and control there would be assurance of repayment in the disposal of forestry products.

Forestry:

"1. Speedy extension to the entire Southeast of a survey recently inaugurated under the McNary-McSweeney Act to supply information now woefully lacking as to the present quantity and condition of standing timber, its rate of growth and rate of depletion, and market demands for the several types of timber.

"2. An intensive forest fire protection program as provided under the Clarke-McNary law, to be actively supported with adequate funds and properly enforced by co-operative action of the Government with the several States; this program to be pressed for the protection of both the public and privately owned forests against the constant ravages of fire, which each year destroy at least fifty per cent of the current annual growth.

"3. The development of a plan for deferring taxes on timber until time of its disposal in cases where its management is to be carried on under the proper regulations for reforestation and the yearly marketing of matured timber.

"4. The acquisition of sub-marginal agricultural lands in connection with the States and Counties for the purpose of reforestation on a self-liquidating basis.

"5. The establishment and extension of schools having departments for vocational teaching; especially those relating to the conservation and reproduction of forests.

"6. The adoption at once of a National Forestry operating policy following a practice equally effective as that now followed in European Countries where the value of forests have been fully appreciated by the public and their economic use fully availed of.

"7. The immediate consideration and if found feasible and desirable, the leasing from individuals of areas of land suitable for reforestation for a rental which for a long-time period will be sufficient in amount to meet the taxes, thus sustaining the financial credit of Counties and States and permitting continuance of their programs of education and social service.

"8. We realize that in any State or in any County, where co-operation is to be provided by the Government, there should be satisfactory evidence of organized local support. We think this should be assured after careful research and fact-finding, and, as in the case of the Federal Highway Act, co-operation should not be extended unless the basic conditions are found satisfactory.

"9. We recognize forestry as a branch of agriculture and since the growth of timber is a crop production we feel it should be so stressed as a National policy."

Signators of the letter included M. B. Wellborn, of Alabama; W. F. Coachman, Harry Lee Baker, Stanley S. Sheip, of Florida; S. C. Sweeney, Bruce Webb, Hugh MacRae, of North Carolina; Fred Merrill, Mrs. Ellen S. Woodward, of Mississippi; Dr. A. M. Soule, H. McDowell, F. L. Woodruff, of Georgia. Other members of the committee are Frank P. Glass, Sr., R. E. Lambert, Thos. Bowton, Thad Holt, Colonel J. C. Sellers, T. G. Woolford, H. G. Hastings, Joe Lawrence, Guy Guthridge, Judge Robert Bingham, Frank McVey, Donald McDonald, Catron Jones, Reuben B. Robertson, W. J. Damtoft, Lenoir Gwyn, F. P. Latham, David R. Coker, Dr. E. W. Sikes, H. A. Smith, B. S. Meeks, J. T. Lazar, W. H. Andrews, H. W. Barre, Dr. Bruce R. Payne, Rutledge Smith.

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AMERICAN GAME CONFERENCE MEETS

Senator Harry B. Hawes, a member of the Senate Wild Life Committee, in an address at the Nineteenth American Game Conference in New York on November 29, stated that he had been authorized to announce to the Conference that the Senate Wild Life Committee will hold hearings beginning early in January for the purpose of formulating legislation looking to a new and separate Department or Commission of Conservation, which would combine the present conservation activities of the Department of Agriculture, Commerce, and the Interior.

The proposed bill, Senator Hawes stated, would include the present revenue-producing bill known as the Stamp Tax Bill and in a general way would cover all of the conservation bills now before the House and Senate, making it necessary to support only one piece of Federal legislation. The Senator expressed it as his opinion that "a political psychological situation now exists which justifies the effort to create this new Department. The temper of Congress seems to be right for it. Certainly public necessity demands it." Senator Hawes predicted that the proposal will have the support of President-elect Roosevelt. He indicated that the hearings proposed would bring out whether Federal conservation activities should be centered in a new Department of Conservation, in one of the present departments, or in an independent commission reporting to the President and to Congress.

Senator Hawes' address was given under the title "The Future of Our National Conservation" and was devoted largely to the need of reorganizing and concentrating the conservation work of the Federal Government. Among other speakers at the Conference, which brought together game conservationists from all parts of the United States and Canada, were Senator Frederic C. Walcott; Chester Gray, of the American Farm Bureau; George A. Parkes, Governor of Alaska; Jay N. Darling, of Iowa; and William L. Findley, of Oregon.

The Conference extended through three days during which papers were presented dealing with a broad variety of wild life problems. The meeting was considered one of the most successful yet held by the Conference, which is sponsored by the American Game Association. By resolution, the Conference endorsed a unification of all Federal conservation activities in one Department. The resolution specified that in effecting such reorganization those functions relating primarily to renewable organic resources mainly dependent upon soil and water and including animal and plant life be grouped together. It also urged that Congress provide sufficient funds to continue essential conservation activities without curtailment.

Other resolutions passed by the Conference called for the establishment of adequate supervision and management of Public Domain lands, including the preservation of wild life; endorsed the Senate Wild Life Committee's Duck Stamp Bill now before Congress and recommended that it be amended so that not less than 80 per cent of the funds derived shall be used for the acquisition and administration of refuges and breeding grounds for waterfowl; urged a study by the United States Government of the practice of baiting ducks within the proximity of shooting stands; authorizing the appointment of a Game Birds Standards Committee to prepare standards for sporting game birds raised in captivity; authorized the appointment of a committee to prepare a simplified model state law to encourage game breeding; urged greater protection for bears of all species and opposed the killing of bear cubs; deplored the pollution of streams and urged Congress to provide a modern sewage disposal system for the city of Washington.

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GREAT SMOKIES

(Continued from page 32)

that all may perchance be met almost anywhere except on the highest levels. Only the balsam and the spruce refuse to leave their airy homes.

The forest primeval is quite as varied also in its topography, and in its alternation of grove, thicket and open. So few are the levels in the Great Smoky forest that its flats are named. The forests grow at every conceivable angle, some so steep that climbing is exceedingly difficult. There are deep-loamed steep covered by noble forest which would be washed bare to the rock in half a dozen winters were they lumbered by destructive commercial methods. Every summit, no matter how precipitous, is forest covered, if not by trees, then by thickets. One of the peaks of that splendid mountain, Le Conte, whose personality pervades the entire north side of the range, is known as Myrtle Point because covered and protected by myrtle. Other mountain tops, like Clingmans Dome, highest of the range, are covered by balsam. Still others, where summits are broad and flattened, are covered with rank heavy shrubs.

The innumerable streams, too, contribute their opens—waterside meadows, now and then of great loveliness, or broad freshet-made pockets among whose rotting logs occasionally may be surprised some rare orchid. Hundreds of these streams have gorges, due to their steepness and speed.

Recent research has identified forty species of mammals in this wilderness, and Dr. Komarek, of the Chicago Academy of Sciences, predicts that the number will reach seventy-five. Many northern forms have been found on the high summits. The deer have gone under the rifles of the mountaineers but bear still lurk in the fastnesses. Bird life is abundant, including more ravens, probably, than the east can elsewhere produce.

The forest primeval! Comparatively few lovers of the woods in this generation have ever seen even so much as an acre of the original deciduous forest which once was the glory of America.

It is not for me to teach the visitor appreciation of the forest wilderness out of which their forefathers wrought this nation. That remains to the Great Smoky Mountains National Park. It is what national parks are for.

Central States Forestry Congress Directs Attention Toward Marginal Lands for Forestry

That marginal and submarginal lands now in agriculture may be changed from a burden and menace to a substantial support of the community, the Third Annual Meeting of the Central States Forestry Congress in Louisville, Kentucky, on November 17 and 18, passed resolutions urging each Governor of the several states to appoint a committee to study the tax reverting lands and to recommend a policy and legislation for including these in an expanded system of publicly owned forests. At the same time Congress was urged to restore and increase appropriations for purchasing land for National Forest purposes, for the improvement, maintenance and protection of existing National Forests and for cooperation with the States under the Clarke-McNary Act.

Laying emphasis upon the need of controlling erosion, protecting watersheds and stream flow, the Forestry Congress again endorsed the Leavitt bill, H. R. 4608, authorizing investigations, tests and experiments in erosion control.

To the end that farm woods may be adequately protected and developed every college of agriculture was urged to include at least one required course in the principles of forestry for the advantage of future agricultural

teachers, county agricultural agents, extension specialists as well as actual operators of land.

William F. Lodge of Monticello, Illinois, was elected president for the coming year to succeed W. E. Difford, of Louisville, who presided at the opening session.

Stuart Takes Issue with Chamber of Commerce Over Nursery Stock

R. Y. Stuart, Chief of the United States Forest Service, on November 9 took issue with published statements by the Chamber of Commerce of the United States that "the Forest Service has produced large amounts of evergreen seedlings for reforestation and has furnished some stock to private land owners in competition with commercial nurserymen." This statement was published in the pamphlet "Government Competition with Private Business", issued by the Chamber.

The Forest Service has never planted a single seed in any one of its nurseries with the intent of selling the seedling produced, the Chief Forester declared in a letter to H. I. Harriman, president of the Chamber.

"For some years prior to 1925, a special provision of law authorized free distribution of planting stock to farmers in part of Nebraska," he wrote, "but this authorization was discontinued. On rare occasions there have been small quantities of seedlings which for one reason or another could not be used on government land. When this has occurred, these surplus seedlings have been offered for sale as condemned property if they had any value, and a few purchases have been made, just as other useless or condemned property is sold whenever possible. The total amount of such transactions over a period of twenty-five years has not exceeded a few hundred dollars."

The statement, Mr. Stuart pointed out, is "therefore literally true, but the picture is not in accordance with the facts."

Another statement in the bulletin also drew fire from the Chief Forester. "Although the Forest Service has a policy of operating on a sustained yield basis, in the National Forests, sales have been made without regard to this system of management, resulting in excessive quantities of lumber being thrown on markets already over-burdened," the statement read.

"The Forest Service has not sold timber without regard to the policy of sustained yield management, nor has it sold timber in such quantities that excessive lumber production has resulted," Mr. Stuart declared in his letter. "On the point of sustained yield, applications totaling billions of feet of timber have been rejected because the sale of the timber would violate this principle. Further, the Forest Service has refrained from offering sales or accepting applications which would place on the market as much as the possible sustained yield in those places where the making of such sales would be disadvantageous to the local lumber industry. The only possible foundation for the statement is that in some cases the conditions do not permit the immediate application of the sustained yield principle without undue hardship to established industries and communities or without excessive loss of values to the United States and to private owners of timberland. An example of such a case was when the amount of available mature timber was not sufficient to keep an established mill in operation permanently. This made the alternatives either: (1) to cause the immediate destruction of the established industry and the community which it supports by refusing to permit cutting at the rate necessary for the industry as organized; or (2) to continue the industry and community on the basis of the existing scale of operations so long as the supply of grown timber lasted. Under such conditions the local establishment of sustained yield has been deferred."

GROWING CHRISTMAS TREES

(Continued from page 31)

wide growing range, and is so easy to propagate that it is somewhat cheaper than any other species. White spruce is superior in form and color but its range is limited to the part of our country where the weather is severe, and besides it is a rather slow grower. Rocky Mountain white fir is suitable for Christmas tree planting, and what a beautiful tree it is! The balsam fir is the most popular for holiday observances, but it cannot be grown with much success outside its natural range. The Douglas fir belongs to this list, as does the red cedar which grows successfully in the warmer parts of our country, though it can be objected to because it is an alternate host for apple rust.

In the planting operations the utmost care must be taken not to allow the roots of evergreens to dry from exposure to wind and sun, but be kept moist and covered until planted. Carrying the plants in a pail with enough water to cover the roots is one way. Boys and girls who read this page know why this must be done. After we get the rows absolutely straight and a stick the right length in hand to

trees respond to cultivation just the same as any of the annual crops, and losses due to dry weather are less, when cultivation is practiced.

How long does it take to grow a crop? Let us take one species, say Norway spruce. If good stock is planted and cultivation practiced, table trees, one to three feet tall, can be grown in three years; trees four to five feet in height in six years. Of course, variations in growth are certain among different plantations and even among the trees in the same plantation. A table taken from a Special Bulletin No. 78 of the Michigan College of Agriculture, shows the growth of trees in a cultivated plantation of Norway spruce in southern Michigan.

I'll let you speculate on the returns. There is so little regulation of the Christmas tree market that the marketing phase is so much more speculative than the growing. But let's suppose that we planted twenty-seven hundred trees on our acre, and eighty per cent of them survived. Let us say that our cost is seventy-five dollars for the planting stock and let us further assume that the average price of thirty

Year in plantation	Average of 10 largest trees	Average of 10 smallest trees	Average of 320 trees
Height of planting stock	Feet	Feet	Feet
First year	1.8	1.4	1.4
Second year	2.7	1.7	2.1
Third year	4.0	2.3	3.0
Fourth year	5.7	2.9	4.1
Fifth year	7.2	3.2	4.9
Sixth year	8.4	3.4	5.5
	9.5	3.6	6.0

determine the position of the plants, then study the illustration for a good way to plant.

It requires care in getting a plantation started, but once established little care is needed; and this can be done at odd times. The soil should be cultivated two or three times a year for two years, and for the third year in case of spacing four by four feet. The

cents per tree is realized. Surely this is plenty low enough. Now multiply 2,700 by eighty per cent then by thirty cents, subtract seventy-five dollars and divide by six, and you will get the annual return on the acre exclusive of labor costs, or any expense for disease control and possibly an application of nitrogen fertilizer. Not so bad, do you think?

REDINGTON REPORTS BENEFITS OF WILD-LIFE ADMINISTRATION

Conserving the nation's wild fowl benefits not only sportsmen and conservationists but also farmers, merchants, manufacturers, and others who supply the needs of hunters, Paul C. Redington, chief of the Bureau of Biological Survey, points out in his annual report to the Secretary of Agriculture.

As an emergency measure, the department restricted the 1931 waterfowl hunting season to one month. Comprehensive surveys showed the success of this drastic action. The shortened season, says Mr. Redington, saved millions of ducks, and this beneficial result, together with improved breeding conditions this spring, appeared to warrant a longer season for the fall and winter of 1932.

In line with the federal conservation program, eight wild-life refuges were established for administration by the Biological Survey during the year, including one in Alaska. Five others were enlarged. When lack of funds threatened a curtailment of the migratory-bird refuge program, the Biological Survey appealed to the country to undertake the creation of supplementary community sanctuaries, particularly in the Northern Prairie States, and it has cooperated with other agencies by furnishing information regarding the biological fitness of proposed areas.

Another serious threat to the refuge program was removed when the Nebraska department of public works dismissed an application for

a drainage project as detrimental to the public welfare, since it would have an injurious effect on the Federal migratory-bird refuge at Crescent Lake. This decision, demonstrating the growing interest in the need for bird refuges, says Mr. Redington, should be influential in preserving similar places. Ill-advised drainage, he says, has destroyed many other sanctuary areas, and done irreparable injury to their wild-life resources, frequently without benefiting agriculture.

In the interests of crop growers and livestock owners, the bureau has continued to cooperate in the local control of injurious mammals and birds. Depreciation in the price of farmers' products has made it all the more necessary to prevent losses, says Mr. Redington, and the number of predatory animals taken has increased. In Texas, for instance, 17,475 bobcats, coyotes, mountain lions, wolves, and ocelots were killed by federal and cooperative hunters.

Throughout the country, the Biological Survey has carried on a campaign against brown rats, directing during the year more than 250 cooperative anti-rat campaigns. Fur farmers have been served by the bureau's investigations of color inheritance in foxes and by its experiments with wire floors and fur sheds.

Information on the food habits of birds and mammals, on their distribution and life habits, and on their diseases has increased.

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TREE IMMIGRANTS

(Continued from page 25)

obtained from seeds picked by natives in the Siamese and Burmese jungles, where its use as a cure for leprosy has been known for centuries. Medical men had been buying seeds without once seeing the tree from which they came. Rock found several tree species yielding chaulmoogra oil, seeds of which he sent to Washington. Plantings were made in Hawaii and elsewhere, and at latest accounts the trees were doing well.

An important milestone in the American development of another Chinese tree importation, the tung oil tree, was marked on March 21, 1932, when the first tank car of tung oil ever produced in America was shipped by the Alachua Tung Oil Company of Gainesville, Florida. The shipment marked twenty-seven years of tung-tree growth since the first seeds were introduced by Dr. Fairchild in 1905. Tung oil is an important ingredient of varnish, is essential in the manufacture of certain insulating compounds for dynamos, and is a waterproofing agent. The United States used more than 14,000,000 gallons of tung oil in 1930, all of it imported. The lone carload of oil produced at Gainesville is a milestone in the first serious attempt for America to grow and process its own tung oil.

Meyer's exploration and research resulted in the introduction of the tamopan or grindstone persimmon and the jubube, both Chinese fruits. The tamopan is used by hundreds of tons in China; it resembles a fig in taste. The jubube compares favorably with the date as a food.

Meyer introduced the Chinese pistachio, which has beautiful foliage in spring and autumn. An impressive planting of this tree has been made at Chico, California, and promising yields have been obtained from pistachio orchards. A giant Chinese pistachio stands sentinel over the grave of Confucius in China.

Fruit and ornamental trees have found their way to America by the hundreds, and have attracted much attention, but forest trees as well have made the journey.

The eucalypts have been introduced by independent growers from Australia to California, a State where grow few valuable native hardwoods. *Eucalyptus globulus*, the blue gum of Victoria and Tasmania, grows very rapidly, sometimes reaching a height of 400 feet. The eucalypts are valuable as ornamentals as well as for timber.

Australian acacias have been introduced with success, but without a great show of interest. The acacias are represented in the United States by the locusts and the redbud. *Acacia decurrens*, the black or silver wattle of Australia, has been urged for transplantation. In its native land it is valuable in providing shel-

ter for treeless localities where forests are being planted, its bark is rich in tannin, and it produces a gum not dissimilar to gum arabic. *Acacia melanoxylon*, a fine-grained wood taking a high polish, equal to the best walnut, is also transplanted.

In New England Norway spruce has been grown with success. It thrives further south than the native red and white spruce. Scotch pine has been found valuable for reforestation on sandy soils. European larch, a conifer with deciduous leaves, is also successful.

The Pacific Northwest has the climate for introduction of almost any coniferous tree from any point in the world. Should white pine blister rust create such havoc among the conifers as blight has caused among the chestnuts, the Northwest may choose the world's best conifers for reforestation. Some of those already planted experimentally or for ornament include several species of cedrus, or true cedars, including the cedars of Lebanon from Asia Minor; the Atlas Mountain cedar from northwestern Africa; the deodar cedar of the Himalayas, an important timber tree under management in northern India; the maritime pine from the Mediterranean basin, for naval stores; Japan's cryptomeria and Chile's alerce, both similar to the redwood; the Australian *auracarias*, hook pine and others, said to produce timber superior to our white pine; Chilgoza pine, which grows wild on the mountains of Baluchistan and produces timber and pine nuts; Southern cypress; ginkgo or maidenhair tree of Japan; Austrian pine; Corsican pine; Bhotan pine; and Scotch larch. All these trees have been given a trial in this country as ornamentals or in experimental plantings.

Efforts are being made to popularize a peculiar Australian tree citizen, the cajuput tree, or "dead man's leg." It has a thick spongy bark, from the touch of which it derives its name. It is thought the bark may be valuable for insulation purposes. The tree grows on barren or salty ground, and has been tried in central Florida, where it seeded and attained a growth of fifteen feet in three or four years.

And so the search for new and desirable arboreal citizens goes on from year to year. The Division of Foreign Plant Introduction, since it started its work well over three decades ago, has made more than 80,000 inventoried introductions ranging from field crops to trees, and adds to the number at the rate of from 3,000 to 4,000 annually. The Federal Forest Service casts about keenly for valuable foreign timber trees. And, in an age of much travel, thousands of people alert for new attractive ornamentals and other trees, and their individual if uncoordinated efforts to the cause of tree immigration.

CONSERVATION LEADERS IN CONGRESS

(Continued from page 29)

They found no single government bureau responsible for administering the wild life resources of the nation. To their surprise they found activities extending either directly or indirectly, into the Department of every member of the President's Cabinet—but chiefly the Departments of Agriculture, Commerce and the Interior. As a result closer coordination of the activities of the Federal Government in administering wild life, reforestation, parks and reclamation projects was recommended, and more effective utilization of the federal lands for game sanctuaries was urged.

The work of the Committee on Wild Life Investigations has dealt with the brown bear and moose of Alaska, with more satisfactory trapping laws, and has called attention to the urgent need of more effective control of the shooting of ducks, geese and other migratory

wild fowl. The committee reported on wild life conditions of the Superior-Quetico area in northern Minnesota, now partially protected by the Shipstead-Nolan Act, the proposed Isle Royale National Park in Lake Superior, and more recently the proposed Everglades National Park in Florida. Senator Walcott recently declared that the Everglades is really a wilderness area and must be kept so. "Woe be to the man who tries to put roads into that place," he told a group of National Park people assembled in Washington.

Senator Walcott may command the front page of the great metropolitan dailies when he presides at a Senatorial investigation of the operations in the stock market, he may carry the burdens of a national leader of the Republican party, but his heart is warmest when he is working on legislation to protect the forests and wild life of the country.

M'SIEU HORNS

(Continued from page 21)

As he did so two men from a lumber camp being set up against the coming winter came out of the woods at the little beach backing the bay. The moose turned again toward the open lake and our canoe.

Suddenly 'Poleon came to extremely active life. He pulled off an old mackinaw jacket he was wearing, and discarded his moccasins.

"Jus' wait wan minute," he said in a tense whisper. "Dat fello' goin' to swim de lak', I t'ink me—den I goin' to tak' wan leetle ride on de top of ees back, you bet!"

After the briefest of deliberation, the moose stepped out into deeper water and in a moment was swimming on a course midway between us and the other point of the bay.

'Poleon's paddle jumped out. "Paddle 'ard's you can," he yelled. "Aha! M'sieu Horns, I got you dees tam!" Our two paddles bit the water and the canoe jumped forward.

With great nimbleness 'Poleon had clutched a horn or neck or whatever part of the swimming beast he found handiest and stepped from the canoe, and it was only after I had sheered away that I realized the possibilities of all this nonsense. I had actually been stampeded into action by 'Poleon's quick and enthusiastic decision. So long as my friend was above water all would be well, but, I thought, if by ill chance he got within range of those dangerous swinging hoofs below water, the fun might well be quickly spoiled.

I wasted my sympathy. That 'Poleon rode the swimming moose there is no gainsaying. Not without difficulty, for the beast put up a great objection, though seriously hampered by being caught in the unstable element that he had thought his friend.

Laughing and choking, and far more nearly drowned than was M'sieu Horns, it was a very wet 'Poleon who shortly climbed over a gun-wale.

For whatever reason, the moose delayed or declined to yard up with a group of his own kind, as is the way of his family, until deep snows had arrived. Then, feeling the pinch or difficulty, perhaps, in wandering through the deep drifts in search of food, he became an increasingly regular visitor at the shanty stable yard, eating hay more or less purposefully left about by 'Poleon, who was in charge of the

company's horses, and at last even developing a pronounced flair for the delicious oats forming so important a part of the horses' feeding. Many an envious glance was cast in those days at his handsome spread of horns, and many a trigger finger itched when 'Poleon was not looking. It was in quite different fashion, however, that M'sieu Horns was to meet the great end.

The climax in this intimacy was reached one day when the big beast, attempting to enter the stable door, caught his huge horns in the door frame and stuck there, apparently as securely trapped as his mother had been on the rock platform above the little lake.

All the pulling and pushing, twisting and turning accomplished by half a dozen of the camp men, under the solicitous direction of 'Poleon, was entirely without avail. Only after the securely built-in door frame of the stable entrance had been bodily removed from the building, in pieces, were the stubborn, springing horns released, and the big bull, with a snort of satisfaction at being released from all this manhandling and mauling, rushed out of the stable yard, never to return.

It was a week or more afterwards that, in company with a group of men out to restore a line of wires knocked down by a terrific blizzard, I came upon M'sieu Horns for the last time.

Breaks in wires, caused by heavy incrustations of ice, had caused the unpretentious poles used in woods lines to sag and give, and loops of wire hung down quite near the snow surface.

In a fairy-like glade among snow-draped evergreens, I found him. His legs were drawn up under him and his big soft nose rested easily in the snow. Tightly tangled about his neck was an end of a broken wire . . . it had choked the life out of him!

So intent was I upon this unhappy finding that I scarcely heard 'Poleon as he came up.

"Look!" I said presently, "the wire caught him by the horns, perhaps. He fought and it caught him around the neck. He was weak from want of food and not strong enough to break it."

"Da's right—we got too rough wit' 'im w'en we pull 'im out de stable door," 'Poleon replied. "Ee never com' back! Poor ol' M'sieu Horns!"

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WEATHERPROOFING CONSERVATION

(Continued from page 11)

seek to kill two birds with one stone by arbitrary reallocations of activities under a single overhead.

If such a grouping can be accomplished without severing any conservation bureau from the economic land-use which it seeks to alter, and without mixing the basically distinct organic and inorganic conservation problems, it would probably be a good thing. It is no substitute, though, for the needed cooperation among public factions described in the first part of this paper. Coordination may be preached and legislated from the top down, but must be built from the bottom up.

A third move called for by the economic emergency is closing the gaps in research which correspond, roughly, to the factional cleavages. We have dug up the life histories of corn, cattle, quail, grass, and oaks, but where is the experiment to find how to grow all of them on the same farm? We have studied ducks, fish, and fur, but where is the experiment to show how to grow them in the same pond? In addition to digging deeper into specialized researches, is it not time to tie some of them together? Agricultural research has closed its gaps to the point where crop-coordination almost outweighs crop production as the object of attention, but conservation has not. How else shall the private landowner, or the public land administrator, use the results? How else shall the results contribute their full degree of truth to economic and socialized land-use? The McSweeney-McNary Bill, to be sure, started in this direction, but the very paucity of its support reflects the poverty of public understanding of its purposes.

I plead, in short, for tearing down some of the stone walls which now subdivide the conservation fort, and using the material to heighten the external defenses.

Hyde Urges National Land Use Policy in Annual Report

Recommending that this country's traditional policy of planless agricultural development be replaced with a comprehensive and thoroughly integrated program of land utilization, Secretary Arthur M. Hyde in the 1932 report of the Department of Agriculture reviewed the program of the national conference on land use which met in Chicago during November, 1931.

The program as repeated by the Secretary of Agriculture envisages better economic utilization of our land resources; control of erosion; a far-sighted provision for future timber and public recreation needs; preservation of wild life; the gradual diversion to other purposes of lands sub-marginal for farming; guidance of proper enterprises in land settlement, and important adjustments in governmental organization in the distribution of local institutions and in local taxation and expenditures—adjustments that have become or will become necessary as important changes in land use are made.

The Secretary points out that this is not an emergency program. Its various elements are not new. In many fields the department has for years been developing the factual basis for a national land-use policy.

Emphasis was also given to the tax burden of the farmer and other land owners, and a case made against the general property tax. This, the Secretary said, must be replaced by something in the nature of the income tax and excise tax.

WHO'S WHO

Among the Authors in This Issue

WALLACE HUTCHINSON (*The Battle of Matilija Canyon*), in charge of Public Relations in the California region of the Forest Service, is the originator of "Ranger Bill," whose sayings epitomize the philosophy of the National Forest field force. Graduating from the Yale Forest School in 1903, he saw the pioneering work of the Forest Service in the Middle West, on the Pacific Coast and in the far-away Philippines.



Wallace Hutchinson

DAREL McCONKEY (*Tree Immigrants*) was formerly assistant extension editor for the West Virginia University Agricultural Extension Service. He is now in Washington, D. C., devoting his time to writing. He attended both Davis and Elkins College and West Virginia University.

ALDO LEOPOLD (*Weatherproofing Conservation*), one of the foremost foresters in the country, has had wide experience in game administration. A graduate of the Yale Forest School, he served the Forest Service from 1912 to 1928, four years as associate director of the Forest Products Laboratory, resigning to undertake a survey of game resources for the Sporting Arms and Ammunition Manufacturers' Institute. Today he is serving in a consulting capacity.



Aldo Leopold

EDWARD ORMEROD (*M'sieu Horns*) is in reality Dr. Edward Booth, a Canadian writer, who makes his home at Montreal.

ROBERT STERLING YARD (*Great Smokies—Mountain Throne of the East*) was editor-in-chief of *The Century Magazine* and editor of the *New York Herald* before organizing the National Parks Association in 1919. He is the author of a number of books dealing with the National Parks.



Robert Sterling Yard

WAKELIN McNEEL (*Forest Page for Boys and Girls*) is a leader in club work for boys and girls in Wisconsin, making his headquarters at Madison.

G. H. COLLINGWOOD (*Conservation Leaders in Congress*) is Forester for The American Forestry Association.

